ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF
THE ILLINOIS STATE MEDICAL SOCIETY

ENTERED IN THE SPRINGFIELD POSTOFFICE AS SECOND-CLASS MATTER.

VOL. XII SPRINGFIELD, ILL., AUGUST, 1907 NO. 2

ORIGINAL ARTICLES

THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS.*

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There are two propositions which are incontrovertible and which have a direct bearing on prognosis and therapy. First, pulmonary tuberculosis is curable, and, second, its curability stands in direct relation to the stage of the disease. The curability has long been known to clinicians, while to pathologists it has been proven by the discovery of healed lesions in the lungs of individuals dead of accident or other than tuberculous affections. The truth of the second proposition is attested also by both clinical experience and pathological research. The comparative benignity of pure and unmixed tuberculosis of the lungs is shown by the mildness of the constitutional disturbance, as well as by the fact that, with exception of cases of miliary tuberculosis of the lungs of hematogenous origin, the initial lesions are limited to a small focus. Other facts attesting its comparative mildness may also be adduced, but it must suffice to cite the readiness with which an incipient tuberculosis yields to life in the open air and a proper hygiene.

It is a wholly different matter, however, when the disease has advanced beyond the stage of incipiency. Then other germs have been added and the process is mixed and may be designated very appropriately consumption. It is now a destructive process, and the symptoms, both local and general, are those not of a reactive inflammation, but of softening or caseation and excavation, on the one hand, and of septicemia, on the other. The prospect of a cure or, properly speaking, of arrest grows more remote day by day, becoming less and less the farther the disease gets away from incipiency. From the foregoing considerations it is apparent how necessary is the early recognition of pulmonary tuberculosis and how timely are all contributions to this department of diagnosis.

In the incipiency of the disease its real nature can scarcely elude detection by the careful examiner who seeks for and judiciously weighs all the general and local symptoms. There occur cases, however, which may be termed latent and which display features of constitutional dis-

*Read before the fifty-seventh annual session of the Illinois State Medical Society, May 21-23, 1907.

turbance either without signs in the lungs appreciable to ordinary means of diagnosis or with local changes of so indefinite a character that the physician is in doubt how much importance is to be attached to them. In such uncertain cases, therefore, reliance may have to be placed upon other means of diagnosis than physical exploration of the chest.

Koch's old tuberculin, subcutaneously injected, was the first of such aids to receive recognition. Probably every medical practitioner is more or less familiar with the arguments pro and con through his reading, if not through personal experience. Consequently I may be excused if I omit details as to its use and state merely the conclusions arrived at by diagnosticians of experience.

1. Tuberculin for diagnostic purposes is reasonably safe if the doses be sufficiently small and the intervals between them sufficiently long. 2. The initial dose should be 1 milligram or less, which, in the absence of definite reaction, may be doubled after an interval of three days, this second amount to be doubled again if necessary after another interval of same length, until a maximum of 10 milligrams has been reached. 3. Should a reaction still be absent, the individual may be regarded as free from tuberculosis, but should the injection give rise to fever of at least 2 degrees above normal or that previously recorded, aching in the joints and back, nausea and possibly vomiting, yet without râles or other signs in the lungs, it can not be asserted positively that the tuberculous lesion is in the lungs and not elsewhere, as bronchial or mediastinal glands, bones, etc. 4. Neither can it be concluded in such cases that the reaction positively indicates the presence in the body of tubercles, since the symptoms denoting reaction have been known to follow in persons having syphilis. 5. In spite of these objections, the hypodermic use of tuberculin is advisable in dubious cases and generally will furnish reliable data, especially if these are considered together with those of clinical observation.

The *x*-ray as a means of diagnosis is not used extensively and for obvious reasons can not be employed by the general practitioner. In the hands of experts it yields valuable results which may be summarized as follows: 1. Infiltration of the apex of the lung causes a darkening of the area when viewed with a fluorescent screen and a more or less distinct shadow in the skiagraph. 2. Such a loss of transparency may be detected at too early a stage in the evolution of the disease for the development of recognizable physical signs. 3. The fluoroscope also reveals in some cases a retraction of the lung at its lower border. 4. The skiagraph may disclose the presence of cavities, the existence of which may not be open to recognition by the ordinary means of diagnosis. 5. The *x*-ray furnishes a reliable means of appreciating the actual extent of an infiltration. The objection to this instrument as a means of diagnosis lies in the fact that a diminution or loss of transparency may be caused by other than tuberculous conditions which lead to induration of the lung, and hence the findings of the *x*-ray must be interpreted in the light of the symptomatology.

The clinical recognition of latent and incipient pulmonary tuberculosis is one of the most difficult problems confronting the physician and

rarely can be based upon examination of the chest alone. It must take into consideration the constitutional symptoms. Of these the features most commonly thought to indicate the disease are cough, slight elevation of temperature, decline in weight and strength and loss of appetite. All of these and, indeed, others may exist, but cases are not uncommon in which one or more may be absent.

Cough is of diagnostic value, but not by any means the initial symptom in every case, and in some may be so slight as to be obscured or overlooked entirely by reason of more obtrusive manifestations. Moreover, a hacking cough or even one with scanty mucous expectoration may be due to catarrh of the upper respiratory passages and not at all to tuberculosis. It should be looked for, but not receive undue importance.

Expectoration is not among the earliest symptoms, unless we accept hemoptysis, which always should excite suspicion. It should be remembered likewise that, if sputum exists in incipient tuberculosis, it may be mucoid and entirely devoid of bacilli or contain these in small numbers and only occasionally. It can not be depended on, therefore, so long as the disease is latent or still closed. The discovery of the germ, of course, settles the question.

Fever can not be said to be invariable in the very earliest stage of this disease, and when absent renders diagnosis still more difficult. When it is present, it carries great diagnostic weight and should be looked for in every case. Its especially noteworthy characters are its low range, 99 F. to 100.5 F., its almost invariable presence directly after exertion or excitement, and in women its appearance just before and during menstruation. On the other hand, cases may be met with now and then in which the temperature is subnormal instead of elevated.

Decline in weight and strength, especially weight, is likewise a diagnostic symptom, but ambitious and energetic individuals not infrequently deny a loss of strength or pay no heed to it, believing they are merely overworked and tired. Loss of appetite is usually an early feature of the disease and then contributes indirectly to the decline in weight and strength. Cases may be met with in which the ability to take and digest food remains unimpaired.

A blood examination may often aid in diagnosis, especially if the number and character of the leucocytes be considered in connection with the rise of body temperature. Not only is there a pseudochlorosis tuberculosa, but the white cells are either normal in number or actually diminished in incipient cases and, according to Arneth, there is a predominance of those neutrophile elements which contain one, two or three nuclei. Consequently a pronounced leucocytosis in a case without purulent sputa would speak against incipient pulmonary tuberculosis and is a valuable differential point.

The pulse generally shows more or less tachycardia even during physical repose and to the finger feels compressible and weak. The only other early symptoms requiring mention belong to the nervous system and are marked nervousness or erethysm and neuralgias in various parts of the body, but not confined to the chest.

Not one of the foregoing general symptoms taken singly suffices for a diagnosis of incipient pulmonary tuberculosis, and one could scarcely be criticised for hesitating to express a positive opinion based upon these features collectively. They should excite suspicion always, however, and should lead to a painstaking and, if necessary, repeated examination of the chest, since it is on this rather than anything else on which the question of diagnosis must depend.

Inspection of the chest is generally necessary and often yields valuable information in the very earliest stage. Even before obvious retraction and loss of expansion of the affected lung there is usually discernible a slight yet distinct wasting of the scapulo-humoral muscles which, affecting the muscles covering the supraspinous and infraspinous fossæ of the scapula, causes the scapular ridge to stand out more conspicuously than does its fellow on the opposite side. It is this atrophy also which invading the pectorals gives a slight yet appreciable flattening to the infraclavicular region on the diseased side. With a more pronounced degree of muscular atrophy the apex looks decidedly retracted. Diminution of the respiratory expansion of the apex may be present, but often requires very careful and discriminating inspection for its detection.

Palpation seems to me of inferior importance, since its results are inconstant and depend, in part at least, upon the intensity and depth of the voice. There may be either an exaggerated pectoral fremitus noticeable especially over limited areas at the apex or an enfeeblement, more often the former.

Percussion yields results of positive value in many cases, and yet the likelihood of definite findings depends upon the skill of the examiner, as well as the extent and character of the local changes. The area of primary infiltration is in the posterior aspect of the apex and the secondary localizations develop more rapidly behind than in front. Hence in incipient cases the physician should direct his attention chiefly to the suprascapular and interscapular regions, although by no means neglecting the areas likely to be involved in front and at the base. Space forbids their enumeration and description here, and I must refer you to works devoted to diseases of the lungs.

The change discovered by percussion in cases of latent and incipient tuberculosis is seldom pronounced and usually is very circumscribed, for the reason that the tuberculous deposits occur in limited and scattered foci. Indeed, these deposits may be so small at first as to occasion no appreciable alteration in the percussion note. But when any change is perceptible, this consists either in a very slight impairment of resonance which imparts to the note a somewhat wooden character or in a faint degree of tympany due to relaxation of the lung and which may under circumstances deceive the examiner, leading him to conclude that the area is more resonant than is the corresponding area on the opposite side.

The tuberculous process leads also to more or less retraction of the lung apex and hence in incipient cases valuable information may usually be obtained by carefully marking and comparing the distance to which the two apices extend up the side of the neck. The affected apex is also

less well expanded by respiration than is its fellow, and hence, as I have learned by experience, one often finds that if he repeats his percussion after auscultation the deepened inspirations made by the patient have resulted in a clearer and sharper differentiation of the airless foci and, therefore, a more definite outlining of the impaired areas. After all has been said, however, it is well to remember that the changes found on percussion are often very slight and many times so indefinite as to leave the physician in doubt whether or not any deviation from the normal does really exist.

Auscultation is believed by experienced diagnosticians to afford a more trustworthy means of detecting pulmonary tuberculosis in its very earliest stage than does percussion. The changes in the breath sounds are often so slight, however, that they may escape recognition by the unskilful. The very earliest possible alteration capable of detection is a roughness of the inspirium with or without lessening of the expirium. This roughening of inspiration is not general over the upper lobe, but is circumscribed to those areas in the suprascapular and interscapular regions in which the initial growths of tubercle occur. If auscultation is confined to the front of the chest, as so often is done, this slight but significant modification of the breath sounds may escape detection. Quite speedily, however, secondary foci develop in the apex of the lower lobe behind and toward the base of the upper lobe in front, but always these foci spread especially along the inner border of the lung and must be sought for alongside the vertebral column and sternum. This roughness is usually associated with some intensification of the breath sounds, but these may be enfeebled. There may be jerky or cogwheel inspiration over limited areas at an apex, but I attach less importance to this modification than formerly because of its infrequency. The loud and whispered voice is usually exaggerated and concentrated over the impaired areas, but the opposite may be the case.

Râles become more definite only at a somewhat later stage and then may be anything but pronounced. They denote the development of bronchiolar catarrh and consist either in a fine inspiratory sibilus heard with the first deep inspiration and then disappearing or more commonly in a number of fine crepitant sounds which are audible at the end of a forced inspiration or are only coincident with or immediately follow a gentle cough. Such fine, crackling râles are not essential to an early diagnosis, yet when detected in a suprascapular fossa constitute almost indubitable auscultatory evidence of tuberculosis. They belong to incipiency, not latency, since they indicate an already developed activity of the process, and it would be well if the disease could be diagnosed before râles make their appearance.

CONCLUSION.

The recognition of incipient but closed tuberculosis or of a small focus of latent disease in one apex requires not only expert skill in physical examination of the lungs, but also judgment and experience in the estimation of constitutional symptoms. The more obscure and indefinite

the local physical signs the greater must be the attention paid to the systemic evidences of disease, as temperature, changes in the blood, decline in strength, weight, etc. I have known an obscure case of pus infection with doubtful pulmonary findings to be mistaken for pulmonary tuberculosis, when a just appreciation of the relation existing between these signs and the character of the temperature would have avoided the error. On the other hand, many a case of incipient tuberculosis has been mistaken for anemia when a study of the temperature and leucocytes would have led to a different interpretation of the symptoms.

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SOCIAL ASPECTS OF TUBERCULOSIS.*

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The work in the tuberculosis field naturally divides itself into three categories more or less distinct: primarily the development of the scientific facts under the guidance of pathologists, coupled with clinical effort appropriating and adapting for therapeutic purposes all of the accumulating data.

When one considers what has been accomplished since 1880 in this direction, it seems as though we were surely approaching a fundamental conception of the strife between the parasite and the organism. For practical purposes we certainly have an abundance of valuable data. It must be borne in mind, however, that the whole subject of the reaction of the human organism to the hostile parasite is under careful investigation and review, and that our conception of tuberculosis will have to follow the developments of knowledge in respect to these deep physiologic problems, perhaps to the point of entirely altering what is now reasonably fixed scientific dogma. Our great advances in therapeutics have not been entirely due to this increase of accuracy in our scientific concept.

In certain respects a knowledge of the true nature of tuberculosis has been an aid in the combat against it as a general proposition, but the present stage of therapeutic efficiency is the result of scientific effort, clinical rather than pathologic.

Therapeutics is, as it has always been, essentially empiric, and whether we shall ever see the time when it is not so is conjecture. Beyond all question the plan of treatment now approved is the result of painstaking and determined experiment based upon close observation and wide interpretation of strictly clinical facts. Wonderful as the improvement has been in the method of procedure, it is far less the result of scientific acumen than it is the fruit of determined and devoted service on the part of physicians more humanitarian than technically scientific.

So great has been the growth in recognition of the tremendous importance of tuberculosis to mankind on the part of the medical profession and cooperation with them on the part of the people at large that a wave

*Read before the fifty-seventh annual session of the Illinois State Medical Society, May 21-23, 1907.

of resolution to combat the evil, unprecedented in the history of mankind, is sweeping over the world. The sense of obligation to those whose life conditions make them, on the one hand, unduly exposed and, on the other, hopelessly restricted in their ability to put forth individual correction has grown to the point of imperative impulse and is driving the public on to some beneficial result.

As a phase of this movement comes the necessity for organization, and the second category into which the work falls is that of systematic propaganda. Into this field drift the laborers who have talent for and taste for organization, and, although it is obvious that a great deal of effort might be frittered away on the mere framework of such a structure and although it is easy to lose sight of the real object in the interest as to plan, machinery, office-holding and public prominence, it is yet to be borne in mind that the comprehensive achievement in this warfare can not take place without the highest development toward perfection of this same machinery. It must not be forgotten, however, that this machinery is not only not strictly medical machinery, but that it is only casually and to a limited extent at all a medical matter.

However possible it may be for the profession to organize and develop these instrumentalities of propaganda, the product of their activities is bound to be of much broader relationship. After all has been determined that can be by the medical scientist, after all the organization plan that it is desirable to outline has been realized, there still remains the enormous problem, how to bring to bear upon the masses of people in the world the knowledge and facilities available for their succor in their dire conditions. How to generalize, for the benefit of the race, specific knowledge, how to distribute to the many the special advantages formerly available only to the few, is a problem in sociology, and that means not only a task which can not be solved by physicians as such, but which can be participated in by them only in so far as they make themselves sociologists.

According to our present light, the technic of management in any given case of tuberculosis is reasonably well settled so far as the method of election is concerned, but what may be determined as the minimum in point of facilities, cost and attention, maintaining at the same time efficiency, is as yet more or less open to question. The present conception of a perfect régime, whether prophylactic or curative, in spite of its simplicity of principle, is exceedingly complex in its broader relations as to practicability.

It is perfectly obvious, however, that the success of any movement, considered from the community standpoint, is going to be limited by considerations of feasibility. Not only must the social conditions in which the community reposes be molded, adapted and perfected, but the determination as to the essentials of management of this subject must proceed to the fullest possible extent in the direction of simplification.

The problem of combating tuberculosis in communities presenting comparatively small groups of indigent is really simple. It requires noth-

ing more than a determined, intelligent effort on the part of the forces working to that end. The sparseness of population, the accessibility of open spaces, the comparative cheapness of supplies and the lack of enormous "group inertia" pertaining to masses of people, all offer features of feasibility and ease of management which grow progressively less as the mass in question becomes more dense.

It is only necessary to contrast the problem presented by one city tenement with such conditions to see, at a glance, the task is inexpressibly greater in the large city. It is not merely a question of larger numbers; it is a question of absolutely different conditions of living, involving not only industrial pursuits, fixed styles of habitation and utter absence of open-air facilities, but it involves that great and intangible tenacity of choice found in the masses of people, whereby they apparently prefer conditions of discomfort and squalor to conditions of more sanitary character, which is not at all a matter of intelligent choice upon their part, but a fixed, underlying, psychologic factor recognized by all sociologic observers in their efforts to institute even practicable reform.

These facts make the city problem complex to the last degree and yet the more imperative, for by no possibility can the interests of the intelligent and amenable of the body politic be safeguarded without reckoning with and mastering these lower elements in the community.

The problem is not a mere question of saving the lives of so many poor and ignorant; it is the problem of rooting out and exterminating conditions which continue to breed disease and to serve as a focus from which dissemination to the entire body is inevitable. So far as the determination as to the greatest possible simplicity goes it is as desirable for the small group as for the large one, but the methods whereby the warfare should be carried on are utterly different in the two cases.

The greatest advance toward practical solution has come with the recognition of the fact that radical climatic change is not an essential. It has been demonstrated over and over again that the arrest and cure of a tubercular process is entirely practicable in almost any climatic conditions. Let us not waste time over a discussion as to whether there is a better or worse climatic setting. The fact is, that radical climatic change is impossible for any but a tiny majority of the patients and is, therefore, to be set aside as of no practical importance in the light of our recent experience. The same can not be said, however, as to the relative necessity for clean air. What a pure air is is not easy to state, but that pure air is better than polluted air is beyond question, and that the way to offset the impurity of city air is by providing unlimited access to such air as there is, is also clear.

It is obvious that under present conditions at least most of the tubercular poor have got to be cared for under some conditions other than hospitals or sanitariums afford. There is no immediate prospect that such facilities will be offered nor has the day yet arrived when incipient patients from these classes could be induced, as a rule, to go away for sanitarium treatment. All are agreed that tuberculosis must be met where it is and that some conditions must be established which will ac-

complish adequately two things: First, education of the individual as to his needs and possibilities; second, an opening for him through which these can be attained.

Although as an industrial question the living wage and its bearing upon food is of paramount importance and for that reason becomes the corner-stone of any structure which may be permanent, it is, after all, true that food, irrespective of wages, is the most possible element to supply through philanthropic effort. This really is a mere question of money and sufficiently intimate supervision.

The question of habitation presents the real difficulties in the matter. Though this has a distinct relation to living wage as a broad proposition, it is not as susceptible of adjustment and solution by far as the food question. The individual child, for example, can be fed quite irrespective of the family feeding. It is rare that it can be practically housed at a distance. It is, however, true that such an individual in the family must be housed differently, even though in the same habitation, and how to create out of a tenement mess a hygienic corner is the great problem involved in this matter.

The difficulties are less in cases which are sufficiently early or mild to be ambulatory. The necessity for a combination of perfect rest and fresh air, which modern therapeutics recognizes, taxes the ingenuity of the physician working in this field to the utmost. It is, however, also true that even these forlorn conditions can be combated and in a large measure overcome by sufficient determination.

Again let me call your attention to the necessity for simplification to the utmost degree of our demands as to therapeutic necessities. Once we have determind what are the essentials and have further determined that those essentials can be attained in conditions presenting a certain minimum of facilities, we have established a unit of therapeutic procedure. This may be regarded as a medical determination. The problem of installing efficiently that unit in the thousands of spots where tuberculosis exists is a problem for the sociologist. The machinery necessary to achieve this must be the outgrowth of years of effort from countless workers approaching from all directions, but focusing upon this point. The foregoing brief suggestions bear particularly upon the treatment of those actually involved in the disease.

The greatest problem of the future in the tuberculosis crusade, because the one fraught with the most possibilities, is the problem of prophylaxis. What is to be done to render the chance of infection less? Here we encounter the intricacies of the social structure manifested to a highly multiplied degree. With those diseased we are dealing with, after all, a fraction of the community. For the purpose of influencing those not diseased we are dealing with conditions involving practically the entire mass of people. No one can know what individual is especially in need of protection. No one can at present hypothecise as to the susceptibility or probability of infection. The necessary prophylaxis must be universal and, of course, opens the whole question of the physical habits of a people.

In order materially to influence this question, we find ourselves plunged at once into the depths of difficulty presented by the conditions of the industrial classes. The well-to-do, no matter how unhygienically disposed, are nevertheless to be reached by enlightenment and are not hopelessly barred from the fruits thereof, but conditions of living which stand in conflict with hygienic possibility and which are the result of fixed industrial and social institutions must be modified to whatever extent is necessary before this achievement in preventive medicine can be conspicuous.

In common with all questions involving the amelioration of conditions in which the industrial classes live and particularly involving the increased enlightenment of the whole people, this matter must be approached most effectively through the children. When we consider the three factors which are of primary weight in this warfare, this will be manifest. We must first have such habitation conditions as will not make the infection of the children an inevitable result. Conditions must be found whereby children can have a certain protection from infra-family transmission. This involves not only better habitations, but a different conception of domestic management, and this can be achieved only by a strong pressure in behalf of the children.

Second comes the spread of intelligence. It is very well recognized that in sociologic effort extending in its scope and prospect over a long period of time the point of advantage and attack is the child, and so it is that, in looking forward a generation for substantial results, we are quite justified in pinning our faith as to promise of those results upon the education of the child now coming up. Not only is the promise of mature intelligence through education of the child justified, but right along even during childhood years these little citizens exercise an immeasurable influence upon family life.

But above and beyond this is the third consideration. No problem is greater before the world to-day than that of instilling the essence of hygienic living. Assuming, if we may, for the moment, all our desiderata and all of the necessary physical conditions and possibilities as achieved, until the genius of the people has been reclaimed from the habitation type and restored to the out-of-door and air-loving type this question will not be solved. While recognizing certain apparently contradictory facts, such as the extreme susceptibility of savage tribes to tuberculosis and the relative insusceptibility of habitation tribes of our city dwellers due to what seems to be an acquired immunity, one is nevertheless justified in declaring that habitation life is essentially an artificial condition which must be met by appropriate corrections.

The notion of immunity incident to prolonged and intense exposure to infections may have a scientific interest, but even if it were sound, as a means of ridding the world of tuberculosis and of making life safe and agreeable it is not to be considered. The love of the out-of-door life, irrespective of its elevating and emancipating effects from a mental or moral standpoint, is perhaps the greatest safeguard of the people. In no way can such life, taste and habit be inculcated without affording oppor-

tunity, and we come immediately face to face with what is thought to be simply a civic problem, viz.: the establishment of out-of-door space, accessible to the public and offering such facilities and attractions as will lead the youth of the community to incorporate into its daily life a measure of its experiences.

The enlargement of the plans of outing, of out-of-door schools, of playgrounds, of supervised gymnasiums and all of the activities which can be brought to bear upon the development of the young, are of fundamental importance in this broad conception.

When we stop to consider that tuberculosis is only to be cured in its incipiency, that whenever it is established and progressive it is not only to the individual a certain destruction, but to the contingent community a menace, and when we consider, in addition, the probability that an enormous part of the infection takes place in childhood, it leads us inevitably to the conviction that, from a public and sanitary viewpoint, efforts should be concentrated upon prevention.

The few suggestions foregoing, it seems to me, unerringly point to the conclusion that the successful war upon tuberculosis is a community matter rather than a medical matter and that, however great our duty may be as enlightened and expert molders of public opinion, we must unfetter ourselves from our special and scientific restrictions. We must enlarge our view and distribute our energies, in so far as we hope to be effective, into lines of sociologic research and effort and endeavor not only to become wise critics of method, but earnest cooperators in the work of social evolution.

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THE MANAGEMENT OF TUBERCULOSIS.*

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The consideration of this subject is undertaken with a knowledge of the fact that the ablest minds of both the medical profession and laity have within a comparatively recent period of time contributed liberally to this topic of ever-increasing interest.

Repetition, however, may bring conviction, and the results already achieved in this field of medical science continue to be of far-reaching importance, of interest to the profession from a medical and humanitarian aspect, and to the laity from a social and economic standpoint. I believe that to-day we are more in accord than ever before in our views concerning the management of tuberculosis; the wild orgy of excesses and delirium of extremes prevails to a much less extent. Of the old theories and teachings we have retained all that is good and have endeavored to eliminate from the new that which is irrational and subjects the unfortunate victim of tuberculosis to widespread experimentation in the attempt to exploit so-called cures.

*Read before the fifty-seventh annual session of the Illinois State Medical Society, May 21-23, 1907.

In the management of tuberculosis and in an effort to combat this plague early recognition of the disease is most essential, and by early recognition we mean before ocular demonstration of the germ; when there is only a slight initial lesion in the form of infiltration limited to the apex or a small portion of one lobe, without tuberculous complications and with slight or no constitutional symptoms, gastric or intestinal disturbances or rapid loss of weight, slight or no elevation of temperature or acceleration of the pulse at any time during the twenty-four hours, expectoration small in quantity or absent. With pronounced physical signs could not the veriest tyro make the diagnosis, no highly refined knowledge being necessary, no hearing abnormally acute and no instruments of precision essential?

A recent observer in Colorado has submitted a report on seventeen hundred cases of tuberculosis. The average period of delay following the recognition of the symptoms referable to disease up to the time of the patient's arrival in Colorado was twenty and one-third months. Active extensive trouble in both lungs in 69.1 per cent., while 53.05 per cent. presented all the evidences of a profound constitutional disturbance, including the sepsis of secondary infection. In the management of tuberculosis medical climatology has come to play an important rôle. Climate, however, is no longer prescribed without regard to the circumstances of the patient or the stage of his disease. In the case of those who cannot afford the expense incident to a change of climate it opens the door to regrets that are likely to harrass the mind when it most requires repose. Taken from his home and the association of his nearest connections who would have soothed his sufferings by a ready anticipation of all his wants, he finds himself in a strange land. I have witnessed in my long residence in Colorado the ill effects of sending a consumptive to a distant state penniless and with advanced consumption. I know that nothing can be more irrational.

For those who are properly equipped financially we recognize the value of the ideal climate, the one with the greatest possible amount of sunshine, a pure dry atmosphere, light winds and porous soil, with elevation sufficient to increase the respiratory act in depth and vigor.

In the management and care of the tuberculous the state must make provision for its unfortunates; it, indeed, owes something to its citizens; its tuberculous poor are worthy of every consideration, and it would appear a duty of the state to make proper provision for their care and if possible restore to health those incapacitated by disease, returning them to the commonwealth able-bodied citizens. The necessity and value of this provision can be impressed upon the laity by free popular lectures, such as recently inaugurated by the Chicago Medical Society. Indeed, more will be accomplished in this way than by political pilgrimages to state capitals with the hope of influencing the chief executive and legislature to act according to our views concerning sanatoria.

Could the knowledge of the facts we have gleaned concerning tuberculosis be impressed upon the laity, the executive veto of measures passed

for the common good so far as this disease is concerned would be exceedingly rare, and the wrangling of peanut politicians would forever cease when these public necessities were under consideration.

The prolongation of life by the suppression of preventable disease is of much greater value to the state than the cost of the means employed. The history of the therapeusis of tuberculosis as applied to the management of the disease presents varying extremes; various periods have been well represented. Cod liver oil at one time had few competitors; phosphorus, iron, the hypophosphites, phenol, quinin, creosote, we are all familiar with, yet more specific medication is eagerly sought. Notwithstanding our therapeutic excesses, science, we trust, may yet deliver us from the chaos of it all. Can we not recognize the possibilities in the treatment of tuberculosis by artificial auto-inoculation, according to Wright's theory of opsonins? In artificial bacterial auto-inoculations we undoubtedly possess therapeutic agents of more potency and specific value than anything heretofore employed in the treatment of disease.

In the management of tuberculosis, our efforts to limit the opportunity for infection are worthy of consideration. To those not familiar with the conditions to be met at the modern health resort, compulsory notification and registration will not appeal. Notification, however, will avail nothing without the application of other measures of control. At the last meeting of the American Medical Association the Section on Hygiene and Sanitary Science appointed a committee to draft a form of ordinance which might be used as a basis for legislation of municipalities regarding tuberculosis. Dr. S. A. Knopf, of New York, Dr. Charles Browning, of Monrovia, Cal., and the writer were appointed members of this committee. The following form of ordinance has been drafted:

An ordinance of the city of ————————, relative to the prevention of tuberculosis as a communicable and preventable disease, providing for the supervision of all cases of tuberculosis by city health board, requiring physicians and householders to report to city health board all cases of tuberculosis, and prescribing a penalty for the violation of the provisions hereof.

The Mayor and Board of Trustees of the city of ———————— do ordain as follows:

Section I.—Every practicing physician in the city of ———————— shall report in writing to the Board of Health of said city the full name, age, address and such other data as may be required by said Board of Health of every person afflicted with tuberculosis who has been attended by or under direction of such physician, for the first time, within one week thereafter.

Sec. II.—Every householder, manager, proprietor or keeper of any boarding house or hotel shall report in writing to the Board of Health of said city any person in any house or hotel under his or her charge supposed to have or to be afflicted with tuberculosis. Such report shall be made within twenty-four hours after such person shall have become an inmate, resident, boarder or guest at such house or hotel, and all known facts concerning the illness of such person shall be reported. And it shall

be the duty of said householder, manager, proprietor or keeper of any boarding house or hotel to report from time to time the condition of said patient, as may be required by the said Board of Health.

Sec. III.—Every person having knowledge of the existence of any person having or being afflicted with tuberculosis whom he has reason to think requires or needs the attention of said Board of Health may at once report to said board all known facts concerning the illness of such person so afflicted.

Sec. IV.—Every person in charge or control of any dwelling, apartment, house or other premises in said city shall forthwith report to said board in writing the removal of any person afflicted with tuberculosis from such dwelling, apartment, house or place.

Sec. V.—Every physician, undertaker, householder or proprietor or keeper of any boarding house or lodging house having knowledge thereof shall forthwith report in writing to said Board of Health the death of every person who dies from or while afflicted with tuberculosis.

Sec. VI.—Immediately after the removal or death of any person having or being afflicted with tuberculosis the premises, furniture and belongings occupied and used by said person shall be thoroughly disinfected, cleansed and renovated by such method and in such manner as may be approved by said Board of Health.

Sec. VII.—Any information obtained by said Board of Health under the provisions of this ordinance relative to the identity of the individual afflicted with tuberculosis shall be strictly private, and shall not be disclosed or made public, nor shall said Board of Health disclose or make public the names of any persons reported as tubercular.

All persons reported as tubercular shall be described by number and not by name in public records made thereof, the names of such persons to be nevertheless kept in a separate book by said Board of Health, together with the appropriate number as contained in said records or reports, for the use of said Board of Health only, and for transmission from time to time to their successors.

Sec. VIII.—Said Board of Health shall prepare printed blanks, the expense of which shall be borne by the city of ———— for making reports as herein required, and shall furnish and supply the same upon demand, and it shall prepare and furnish in like manner suitable circulars of information for persons afflicted with tuberculosis, and those with whom they reside or live, and copies of such circulars shall be supplied to all practicing physicians in said city for free distribution to their patients, and said circulars shall be placed in the homes of all persons reported to said Board of Health and of all persons making such reports.

Sec. IX.—Said Board of Health shall not make visits to persons having or being afflicted with tuberculosis, reported by such physicians, nor shall any sanitary surveillance of such cases be assumed unless the person resides in a tenement house or lodging house, or unless the attending physician requests that an inspection of the premises be made. In no case where the person resides in a tenement house shall any action be taken if the attending physician requests that no visits be made by a repre-

sentative of said Board of Health, and if he himself is willing to deliver circulars of information, or to furnish such equivalent information as is required to prevent the communication of the disease to others.

Sec. X.—If at any time, in the judgment of the Board of Health, it shall become necessary for the public safety that said Board of Health shall assume sanitary surveillance on account of the negligence or unwillingness of the physician, or attendant, who assumes the duties of giving instruction, as provided for in the preceding section, then said Board of Health shall assume such surveillance and no person shall interfere with or obstruct the entrance, inspection or examination of any building or house or the occupants thereof by the representative of said Board of Health, when any case of tuberculosis has been reported as existing in said house or dwelling.

Sec. XI.—Every person violating any of the provisions of this ordinance shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine not exceeding ———, or by imprisonment in the city jail not exceeding —— days, or by both such fine and imprisonment.

Sec. XII.—This ordinance shall take effect and be in force from and after the — day of ————, 190—.

The problem of child labor should be considered in connection with this subject; the closest scrutiny should be placed over children of tender years who enter into the struggle for existence; labor physically injurious and hours that tax the child's delicate powers should be properly adjusted. The preservation of the child means strengthening of the race, with all that may accrue to the future generation.

In conclusion, problems of infinite variety will demand solution, yet, broadly speaking, our efforts in the management of tuberculosis should be to reduce the opportunities for infection, promote the individual powers of resistance, create the most favorable environment for the afflicted, and finally utilize all the educational influences at our disposal concerning this disease.

With all our enthusiasm and knowledge of the nature of this study, we must exercise wisdom, discretion and charity, laboring with the people and for the people, to the final end that we of this generation may witness the elimination of the most important disease affecting mankind.

SANATORIUM TREATMENT OF TUBERCULOSIS.*

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BRIEF OUTLINE OF SANATORIUM MOVEMENT.

One hundred years ago Rush anticipated our methods of to-day and half a century later the elder Bowditch, having contracted consumption, cured himself by the application of our own well-formulated principles. When Bodington, of Warwickshire, England, in 1840, enunciated his

*Read before the fifty-seventh annual session of the Illinois State Medical Society, May 21-23, 1907.

views on the treatment of pulmonary tuberculosis, seeking to convince his medical colleagues that a life spent in the open with plenty of substantial food and the avoidance of excitement was the correct method, he was immediately pounced upon and not even given a courteous hearing.

Later MacCormao and others raised their voices against the pernicious habit of keeping consumptives housed in close, poorly ventilated, overheated rooms, still further using remedies which depleted and diet that starved. Later on Brehmer, in 1859, established the sanatorium at Gorbersdorf, elaborating his system of treating tuberculosis, which has gradually come to be recognized as the rational method of opposing the malady. Trudeau can be termed the exponent of a most wonderful crusade in this country, and how reluctant we were to take up with the new doctrine! So cheap and abounding a remedy as fresh air and so common an agent as good, wholesome, nourishing food, and so simple a device as rest were looked upon as a fantasy when compared with those more elaborate methods of saturating with cod liver oil, creosote, cough mixtures, hypophosphites, whisky and a multiplicity of drugs, the futility of which was usually demonstrated by the ill-timed and irresponsible advice at the last to change climate without reference to physical or financial conditions.

SOME REQUIREMENTS AS TO CONSTRUCTION AND LOCATION OF A SANATORIUM.

First of all, the site and the surroundings should be ideal. Easy of access, but away from the center of population, on an elevated and sloping site overlooking, if possible, a sweep of scenery. A sunny exposure, extensive grounds, well wooded, and affording ample space for exercise of different kinds. The soil should be dry and permeable, and the water supply abundant. Comfortable accommodations must be provided. A separate room or, far better, a tent cottage, which can be freely ventilated and properly screened. An administration building equipped with modern conveniences and with facilities for perfect light, ventilation and sanitation. Dust and smoke should be avoided as far as possible, and the buildings should be so arranged that medical supervision can be readily and quickly exercised. Facilities for the quick and effectual destruction of all infected material should be provided. No provision so far as buildings are concerned are necessary for amusement other than an entertainment room, which may be made to serve the purpose of a library or assembly room, containing perhaps a piano, books, periodicals, easy chairs and a wide, open fireplace. Games, such as tennis, billiards, etc., which involve much movement of the arms or to lead to excitemnet, should not be provided, although a modified golf in selected convalescent cases, if patient is properly controlled, is beneficial. Open-air galleries, open to the south and east, are of service in stormy weather, where patients may sit out and take the treatment. A very important adjunct to the equipment of a modern sanatorium is an infirmary which may be a modification of the King lean-to. The acutely ill have by this plan the special advantages of the modern hospital, combined with open-air methods.

All facilities should be provided for the treatment and clinical observation of a patient by the aid of a properly equipped laboratory.

EARLY DIAGNOSIS AN IMPORTANT FACTOR.

Without question the management of tuberculosis must be along sanatorium lines. That the best results are obtained by these means can not be contradicted. Early diagnosis can alone lead to early treatment, and, as the more successful treatment implies an early diagnosis, it follows that the student of medicine should inform himself as to the methods of recognizing the earliest manifestations of this formidable malady. Unfortunately the average student and interne has but meager opportunity for clinical observation of incipient cases in the hospital wards, for these are barred. This lack of clinical experience is no fault of the student, but the general practitioner's responsibility is great, in view of the fact that most of the earlier signs and symptoms of this disease are misinterpreted or overlooked on account of superficial examination and hasty observation, rather than lack of knowledge.

Medical reports of sanatoria furnish positive proof of the value of early treatment, and the percentage of favorable results, as a rule, stands in inverse proportion to the duration of the disease, as well as to its extent. Volumes have been written on the importance of early treatment in these latter days. Only a few comparatively are admitted to sanatoria under that classification. "What we plead for is, that the consumptive shall be taken care of at the right time, in the right place, until he is well, and not at the wrong time, in the wrong place, until he is dead."

Treatment in a sanatorium implies to the highest degree the great triad, fresh air, rest and an abundance of food. The application of these familiar agencies seem simple, but in reality require precision, judgment and faithful, painstaking, medical supervision and control. No one of these agencies is potent for good without the other. The difficulty is not the knowledge of the principle itself, but the correct application of the same.

FRESH AIR.

As to fresh air it must be unlimited in amount, certainly not to be delivered on the wings of a whirlwind, but, if atmospheric conditions permit, practically always in the open.

REST.

Rest in part or absolute rest depends upon conditions. Absolute on admission to the sanatorium. The reliable index for the application of this powerful remedial measure depends upon the strength of the patient, the character of the pulse, the condition of the circulation, and, most important of all, the temperature.

EXERCISE.

Exercise plays an important rôle in the treatment of the afebrile consumptive. Other things being equal, the longer time required to reduce the temperature to normal the more essential it is to postpone exercise

until a week or so has elapsed without 99 degrees being exceeded. Carefully regulated walks serve the purpose of strengthening the flabby heart and muscular system and promoting digestion and assimilation. A patient with a rapid heart, even though the temperature and condition of the lungs be satisfactory, should never be lost sight of, as it is one of insecurity.

Exercise should be commenced tentatively. The extent must be exactly regulated and effects carefully noted. No feature of the treatment requires more care and discrimination than the matter of exercise, especially when the patient is making rapid improvement. He is being constantly guided in all his actions by his feelings, which is always dangerous. Patients not infrequently lose more by a few minutes' overexertion than can be regained in days or even weeks. The weight gained by full feeding may be an increase of fat rather than of muscle, and the final indication is the hardening off stage. Hill climbing is of especial value for patients who are fat and much over weight; the length and gradient of the walk will, of course, depend upon the strength of the patient and the condition of the chest.

FOOD.

The feeding of the tuberculous patient is a problem which demands the utmost precision, and precision is the secret of success. Food to be of nutritious value, the amount and the character must be judged by the digestive capacity of the stomach. Gastrointestinal conditions, as well as idiosyncrasies, must be taken into account. In brief, the food must conform to the requirements of the system, and it may be said that the amount of toxemia and tissue destruction bears a direct relation to the necessity for increased feeding. That diet is best which furnishes the greatest amount of nourishment and which is the most easily digested and assimilated. In this, as in all phases of the management and treatment, each case must be individualized.

HYDROTHERAPY.

Cool or tepid sponging of the body surface, followed by alcohol rubs, are of service in the febrile and debilitated. In comparatively quiescent cases the cool sponge or plunge bath may be taken every morning. This usually has a stimulating effect on the general system, minimizes the susceptibility to colds, promotes cutaneous circulation and increases tissue resistance. There are some contraindications, however, as recurring hemoptysis, general debility and active pulmonary mischief.

A WORD AS TO MEDICATION.

Overdrugging is a bad habit, easy to acquire, but hard to cure. At the last session of the National Association at Washington the report of the Committee on Medication was very brief, deploring the use of many drugs and selecting only those whose therapeutic value has been proven. In brief, some forms of iodin in the glandular type; freshly prepared Blauds and Fowler solution in anemia; nitrites in overtension of arteries associated with hemoptysis; atropia, agaracin and camphoric acid in night

sweats; in addition to these drugs, sponging the patient with weak solution of acetic acid. Diarrhea not to be controlled with opium and astringents, but better results to be obtained by the judicious use of mild purgatives in form of salines, castor oil, calomel and enemas.

Flick maintains that small doses of magnesium sulphate, five to ten grains every hour or two, will do more for a persistent diarrhea than any therapeutic measure he has tried, other than diet. I can not, however, endorse his views relative to the administration of fifty drops of creosote three times a day for mixed infection, and have yet to observe any drug or sera which has acted specifically upon this perplexing complication.

For the control of cough the committee were not in favor of the routine rule of giving opium or its alkaloids, on account of its action on the secretions, except in cases of extreme severity accompanied by exhaustion.

SERA AND VACCINES.

The treatment of mixed infections with streptolytic or anti-streptococcic serum, in the main, has not been attended with much success. The tentative and empirical trials made with it makes it difficult to prove, in many cases, whether the good results are due to the serum itself or to other measures employed. In two out of fifteen of my own cases when the serum was administered, the results were rather striking, the temperature curve after a number of injections dropping practically to normal. Absolute rest in the open had been employed with negative results for weeks. Both cases were classified "moderately advanced," with clinical and microscopic evidences of a mixed infection.

TUBERCULIN.

In spite of adverse opinion relative to the therapeutic value of tuberculin, there is convincing evidence of its growing popularity. It is safe enough to state that in properly selected cases and in proper doses, at proper intervals, it does no harm. We must admit if we accept the preponderance of proof that the use of tuberculin is in accord with the modern theories of immunity, that theoretically tuberculin is capable of increasing the natural defenses of the body, and that clinical experience in its administration ought to influence us in favor of its use.

Twenty-three cases since Sept. 14, 1906, have been under observation at the Ottawa Tent Colony. Of this number, six patients have taken, at the end of twenty-four weeks, a maximum dose of eighteen milligrams of Kochs' new tuberculin, without a reaction. We would not be justified in forming a definite opinion as to results based on so short an experience.

The opsonic index in normal sera varies in different healthy persons and at times in the same person. As to its value as a guide, in the administration of tuberculin, Brown, of Saranac, places the chances for error at 15 to 20 per cent. The difficulty of technic, as well as of application, is noted by many laboratory workers.

TIME ELEMENT A POINT IN TREATMENT.

The greatest menace to the sanatorium movement in this country is the popular misconception as to length of time necessary to bring about a

satisfactory result. The responsibility for failure in many cases rests upon the patient and his friends, from whom he should pray to be delivered in the majority of instances. Patients are so often satisfied on admission that they have only a "bronchial catarrh" or "throat trouble" or that they have a "weakness of the lungs," when, in fact, the disease is advanced, or even far advanced.

A popular and erroneous idea has gone forth that three months is the time limit for a cure. This is based upon the reports of certain German sanatoria, where none but incipient cases are treated and where the usual term of treatment is three months. This term proves very often too short for incipient cases, and the public have been led to believe that a three months' sojourn at a sanatorium will cure, regardless of the stage. What a rude awakening the future will have in store for such vagarists! No fixed time can be set, and no definite statement should be made as to prognosis in any case of pulmonary tuberculosis.

CLIMATE.

As Musser has so tersely stated, "Climate for many years has stood at the head of the list in the management of tuberculosis, in the selection of which the profession was torn by conflicting doubts, now here, now there, in accordance with the energies of the devotees of the respective region. Does it not seem strange, indeed, that that which great men have plead for for years and have sacrificed time and strength to prove by experiment and practice only slowly filtered into our life work? The substance of their pleadings makes our line of action to-day; conservation of strength brings about tissue resistance, adaptability and cure."

RECAPITULATION.

1. It is important to consider the construction and location of sanatoria as essential in the successful treatment.

2. The necessity for early diagnosis and prompt treatment both from a humanitarian and economic standpoint.

3. The principles of treatment are not easy of application and it is necessary to individualize.

4. The public is dangerously educated as to the curability of consumption and the popular misconception as to time limit. The word (cure) should be used with caution.

5. Climate is not an essential in the treatment.

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SOME NERVOUS AND MENTAL PHASES OF TUBERCULOSIS.*

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The literature of medicine pertaining to tuberculosis has, since the era-marking studies of Koch, been characterized largely by inquiries into the origin, clinical pathology and treatment of the disease. Vast, indeed, is the accumulation of this literature, but, in spite of its extent, comparatively little aside from tuberculous meningitis has been contributed to the phases which concern neurology and psychiatry.

In this country no systematic and continuous studies of this department of clinical medicine had been undertaken until the establishment of the magnificent and well-endowed Henry Phipps Institute for the Study, Treatment and Prevention of Tuberculosis, in Philadelphia, when a neurologic department was established and placed in charge of that enthusiastic, conscientious and well-trained neuro-pathologist, Dr. D. J. McCarthy, whose work in the William Pepper Laboratory of the University of Pennsylvania had already won for him distinction in clinical pathology.

In the two annual reports of the Phipps Institute which have been published since this department has been organized, the foundation has been laid for scientific research work of a high order which, as practical and valuable contributions to clinical medicine, will aid in the elucidation of many of the obscure problems of clinical neurology. Inasmuch as the work already accomplished at Phipps Institute has been so systematically detailed in the reports published, and inasmuch as it represents the latest and, I believe, as far as it goes, the best contribution made to the clinical pathology of tuberculosis in the field of neurology and psychiatry, I have thought best, therefore, to summarize the observations of Dr. McCarthy and his co-workers in this paper.

The natural history of the disease, tuberculosis, in its evolution, is insidious, thus giving obscurity to its symptomatology, and confusion results in differential diagnosis. The necessity of proper clinical classification is at once apparent, and to further this end, to avoid confusion and to systematize the observations, both clinical and pathologic, Dr. McCarthy has adopted the following classification which, for thoroughness in detail and yet practical in its arrangement, is characteristic of Dr. McCarthy's excellent work.

ORGANIC LESIONS.

Affections of the Brain, Meninges and Skull.

A. Diseases of the bones of the skull, with secondary involvement of the meninges.

B. Lesions of the meninges.

1. Pachymeningitis (by extension).
2. Lepto-meningitis: acute, subacute, chronic.

*Read before the fifty-seventh annual session of the Illinois State Medical Society, May 21-23, 1907.

C. Lesions of the brain.
1. Acute tuberculous encephalitis.
2. Chronic tuberculous infiltration.
3. Localized encapsulated tuberculosis (Tyroma).
4. Tuberculosis of the chorioid plexus.
5. Ependymitis.
6. Hydrocephalus: external, internal.

Affections of the Spine, the Spinal Cord and Its Meninges.

A. Arthritis: tuberculous arthritis, rheumatoid toxic arthritis, pulmonary osteo-arthropathy.
B. Pott's disease—spinal caries.
C. Lesions of the meninges.
1. Pachymeningitis: external, internal.
2. Leptomeningitis: acute, subacute, chronic.
3. Pseudo-exudates on the meninges.
D. Lesions of the spinal cord.
1. Myelitis: acute, subacute, chronic.
2. Tuberculous infiltration of the cord.
3. Myelomalacia of vascular origin.

Affections of the Muscles.

A. Atrophic degeneration.
B. Muscular dystrophy.
C. Myositis: acute, subacute, chronic.

Lesions of the Peripheral Nerves.

A. Neuritis.
B. Tuberculous infiltration of the peripheral nerves.

FUNCTIONAL DERANGEMENTS.

A. Cerebral.
1. Mental attitude.
a. Hopefulness.
b. Hopelessness.
c. Depression.
d. Irritability.
e. Suspicion.
f. Impressionability—receptivity to suggestion.
2. Cerebral asthenia: memory, sleep, dream-states.
3. Sexual manifestations: depression, excitability, perversion.
4. Insane states.
a. Those essentially tuberculous.
1. Paretic type.
2. Clouston's type, with elation or depression.
b. Those dependent on depression of the body nutrition.
1. Mania.
2. Melancholia.
3. Dementia præcox.
4. Delusional insanity.
5. Paranoia.
6. Terminal hallucinatory delirium.
7. Hysterical insanity.

5. Epilepsy.
   a. Grand mal.
   b. Petit mal.
   c. Psycho-sensory epilepsy.
   d. Jacksonian epilepsy.
6. Ocular manifestations.
   a. Nystagmus.
   b. Nystagmoid movements.
   c. Failure of muscle balance.
   d. Spasmodic conditions of eye muscles, extrinsic intrinsia.
7. Reflex disturbances in the distribution of the cranial nerves: Chvostek's phenomenon, tremors of face and tongue.
8. Cephalalgia.

B. Spinal.

1. Spinal sensory disturbances.
   a. Paresthesias.
   b. Hyperesthesias.
   c. Anesthesias.
   d. Referred pain.
2. Spinal motor disturbances.
   a. Spinal asthenia; fatigue manifestations referred to the extremities and more especially to the trunk.
   b. Paralysis of spinal origin.
   c. Reflex atrophies: reflex joint atrophy, clubbing of fingers (?).
   d. Tremors: toxic, fatigue; intention, non-intention; local, general; rhythmic, arrhythmic.

1. General condition of reflexes..... { increased. / decreased. / absent.

2. Special reflexes..... { Babinski. / Ulnar. / Common extensor. / Basal thumb. / Oppenheim. / Pharyngeal.

   e. Clonic manifestations: ankle clonus, quadriceps clonus.

C. Sympathetic system.

1. Hyperidrosis.
   a. Local.
   b. General.
2. Edema: circumscribed, diffuse, red, cyanotic.
3. Pupillary phenomena: inequality, myosis, mydriasis.
4. Graves' syndrome: exophthalmos, tachycardia, tremor, goiter, diarrhea, v. Graefe symptom, Stelwag's symptom.
5. Tachycardia.

6. Diarrhea, without intestinal tuberculosis.
7. Subcutaneous hemorrhage from slight trauma.
8. General vasomotor tone.

The very comprehensive studies made by Dr. McCarthy and based upon this classification have been a distinct addition to our clinical pathology of the disease. I shall not attempt to cover this whole field of neurological work, but shall consider such parts as are of special clinical interest to us. Of these, tuberculous meningitis stands foremost. It has been recognized clinically since Gerhard, of Philadelphia, in 1832-33, established its anatomical and clinical basis. It is the one tuberculous affection of the nervous system which is of paramount importance because of its universal occurrence and the gravity of the prognosis attached to it. When we remember that it is essentially a disease of childhood, that its occurrence in adult life is comparatively rare, it becomes of clinical interest from the standpoint of its etiology, pathology, diagnosis and possible prophylaxis, while its treatment is negative in the light of all past and present experience.

Tuberculous meningitis is looked upon by pathologists as a secondary affection; and yet, as Koplik ("Diseases of Children," page 252) says: "It is not always possible to determine the primary focus of infection." Again, it is rare to find the meninges alone involved, although cases occur in which the meningitis appears to be primary in origin. In children we usually find the primary focus in the bronchial, mesenteric or cervical lymph glands, while in adults we find disseminated lesions in the lungs, liver, peritoneum and in the bones. The tubercle bacilli find their way to the meninges either through the lymph channels or the blood stream. The former route is perhaps more frequent, while the latter route, which has been disputed by good authorities as not always a possibility, seems, in the light of modern clinical pathology, to be more frequent than has heretofore been accepted.

McCarthy reports a unique and interesting case in support of the blood stream route (Phipps Institute Report, vol. ii, p. 95). The lesions were typical of tuberculous meningitis confined to one cerebral hemisphere and more particularly to the distribution of the Sylvian artery. The case represents, from a pathologic standpoint, the method of infection of the cerebral meninges from a pulmonary lesion and the localization of the inflammation along one cerebral artery is evidence of the transmission of the infection through the arterial circulation. The tuberculous lesions were limited to the distribution of the blood supply of the middle cerebral artery of one hemisphere.

Tuberculous meningitis, too, we must remember, is usually basilar, and, if the convexity is affected, it is usually following involvement of the base, which did not exist in the case, however, reported by McCarthy. McCarthy describes two distinct types of acute tuberculous meningitis, entirely different in their gross and microscopic pathology (p. 99, vol. ii): "In one group of cases, the meninges are in a state of congestion and a large number of pin-point miliary tubercles are found scattered along the course of the blood vessels. In the other, there is a thick, plas-

tic, semi-purulent exudate mainly confined to the base of the brain and most extensive in the intercrural space. The first group is the type found in children where the primary source is a non-suppurating tuberculous focus. This type is found in advanced cases of pulmonary tuberculosis. The second group of cases is found with advanced cases with cavity formation and mixed infection. The pathologic conditions of the second group is in all probability due to mixed infections, as tubercles of the pia may exist without the gross appearance of meningitis, while the meningitis itself, the degree of inflammatory process, seems not to be dependent upon the number of the tubercles. Again, we know that meningitis is in all probability due to the deposition of the tubercle bacilli in the vessels of the pia. The degree of inflammation is difficult to determine clinically; hence, the pathologic subdivisions of subacute leptomeningitis and chronic leptomeningitis are of interest more in the clinical pathology of meningitis than in clinical diagnosis.

The symptoms of tuberculous meningitis are more or less progressive, the prodromal period extending over days or weeks and characterized by varying symptoms, according to the age of the patient. There usually is in evidence a progressive loss of flesh, with loss of appetite, noticed in the infant by refusal to nurse, and in older children and adults, with diminished fitful appetites. A low grade of fever, slight and irregular, some restlessness, irritability and apathy are shown, also alternating diarrhea and constipation. Headache becomes a feature, also vomiting of the explosive type and from inadequate cause, which in infants may be followed by a convulsion, with loss of consciousness. Next follows, but not in regular order, the symptoms of basilar involvement, viz.: strabismus, retraction of the head, rigidity or irregular movements of the extremities. Vomiting and convulsions may become more pronounced to end in coma, with irregular respiration, slow, irregular pulse and with the increase of pressure symptoms, deepening coma and death. In children we may have the peculiar cry which I have also seen in adults with beginning of stupor. This cry varies from a moan to distinct, piercing shriek, and is especially noticeable when the patient is moved or even touched. The terminal stages, viz.: the stupor, the opisthotonos, the retraction of the abdomen, the irregular and finally Cheyne-Stokes respiration; the gradually rising but irregular temperature; the increased and irregular pulse, are symptoms which, alas! are too familiar to all of us.

The diagnosis of the disease should not be difficult if we but consider in detail the history, examine carefully the general symptoms, including the palsies of the cranial nerves, the Kernig sign and observing differential signs and symptoms that we may differentiate typhoid fever, pneumonia, broncho-pneumonia in infants, septic infections and last, epidemic cerebrospinal meningitis, which will demand lumbar puncture; and, too, the consideration of the duration of the prodromal symptoms and the severity of the illness.

Our treatment, as Bramwell (Allbutt's Practice, vol. vii, p. 486) emphasizes, is "preventive, which includes everything which is expressed in good hygiene."

Localized encapsulated tuberculosis, in its two forms mentioned by McCarthy, is of interest clinically, as well as pathologically, as it involves both the man and beast. These two forms of tuberculosis of cerebral tissue, independent of tuberculosis of the meninges, are infiltration and the local encapsulated form (tyroma). The first may be in direct association with the meninges or independent of it. "This is seen in its purest form in the nervous system of cattle. The extension of the process is along the blood vessels and the associated lymphatic capillaries. There is little tendency to the formation of giant cells and to caseation." The local encapsulated form (tyroma) is of much more frequent occurrence in the human being than is the other, and may occur as single or multiple tumors. The encapsulation is not complete; it is the thickening of the neuroglia which gives the appearance of a capsule. The tumors which result from so-called encapsulation are not infrequent in children, according to Starr, and vary in size from a pea to a hen's egg and are usually situated in the posterior fossa. McCarthy reports two cases found in adults, one diagnosed upon the clinical history and findings as healed tuberculous process of the cerebellum, which was confirmed by the pathologic findings. The second was an incipient case of tuberculosis in a boy, 8 years of age, diagnosed and localized as tuberculosis of the left lobe of the cerebellum. This case came to operation by Dr. Charles H. Frazier, a part of the left lobe of the cerebellum was removed, no tumor was found on first operation, but later sarcoma developed in the cerebellum.

Meningo-encephalitis is a lesion that is also found in tuberculous cases as a complication of meningitis or possibly as a distinct lesion. McCarthy reports four cases out of one hundred and ten brains examined (vol. ii, p. 101, Phipps Institute Report) where there was localized cortical and subcortical hemorrhagic softening secondary to tuberculous lesions of the meninges. "Sections of the pia-arachnoid establish the presence of small caseating tubercles containing tubercle bacilli over one of these areas (leading McCarthy to conclude) that the primary lesion is of local inflammatory tuberculous lesion of the pia-arachnoid, with secondary involvement of the cortex, either by direct extension or, more properly, a local interference with the local cortical circulation by obliteration of the capillaries extending into the cortex from the meninges."

Ependymal changes and hydrocephalus become of importance in both clinical and pathologic studies of tuberculous diseases of the brain. McCarthy gives extended studies of these disorders in his report which are of interest and value.

The spinal cord lesions and spinal meningeal involvement and ganglion-cell degeneration of toxic origin found in tuberculosis are of clinical importance, and, if time permitted, I would like to discuss these phases. I will take time, however, to mention the paralyses due to tuberculosis of the nervous system as grouped by McCarthy (vol. ii, p. 117).

A. Those caused by parenchymatous neuritis, in which the nerve fibers become degenerated without evidence of a true inflammatory process are presented.

B. Inflammatory interstitial neuritis, in which all the symptoms and pathologic manifestations of an acute inflammatory process are presented.

C. A complex group, occurring immediately before death, in which the paralysis had first presented the clinical characteristics of a parenchymatous neuritis, but in which there is a tendency to involvement of successive groups of muscles, giving an ascending type and probably due to toxic involvement of both the peripheral nerves and the spinal cord.

D. Pressure paralysis, usually involving the perineal nerve as it curves round the head of the fibula, and subject, at that point, to pressure when the patient remains for a long time in one position, resting on the external surface of the leg.

The paralysis due to involvement of the central nervous system are (McCarthy, vol. ii, p. 118):

A. Those due to acute inflammatory processes of the meninges, such as tuberculous cerebral or spinal meningitis.

B. Hemorrhagic encephalitis secondary to meningitis or independent of it.

C. Paralysis of cerebral origin secondary to infiltrating or encapsulated tuberculous lesions.

D. Paralysis of cerebral origin due to localized areas of softening, secondary to local infiltrating processes of the meninges, cutting off the cortical circulation.

E. Paralysis of spinal origin from tuberculous tumors of the spinal cord.

F. Paralysis due to internal or external pachymeningitis, secondary to Pott's disease. The paralysis is due partly to an inflammatory infiltration and partly to pressure.

G. Paralysis due to tuberculous myelitis, which may be diffuse and infiltrating in type or localized to one or more segments. It may be secondary to obstruction of the circulation of these segments by active arterial disease.

H. Paralysis due to widespread toxic degeneration of the ganglion cells of the anterior horns of the spinal cord (Landry's paralysis).

Differentiation of these groups of paralysis depends upon a careful study of the symptoms present in the individual case.

McCarthy reports a case of Landry's paralysis occurring in a case of pulmonary tuberculosis of four years' standing. The course of Landry's paralysis was rapid, as is usual in the disease, death following eleven days after the first appearance of the symptoms of the disease. I had a similar case six years ago where Landry's paralysis developed in a lady patient, aged 26, school teacher, with pulmonary tuberculosis of three years' standing. She was in Colorado at the time of her last illness and death. Landry's paralysis in this case ran its course in six days.

The clinical psychology of tuberculosis has always interested me, and I have taken pains to follow as closely as possible the mental attitude of cases coming under my observation. Nothing definite or systematic, however, was attempted on my part and as a consequence my observations have been merely casual. It is a pleasure to note that at the

Henry Phipps Institute this phase of tuberculosis is being studied systematically along clinical psychologic lines. McCarthy's work in this field, I believe, is going to be epoch marking, in that it has already reversed the almost universal belief that tuberculous patients were exceedingly optomistic, hopeful and developed euphoria quite beyond the most sanguine expectations. McCarthy says it is difficult to determine the mental attitude of the patient because of the change of disposition manifested in most cases after the disease has well developed. Irritability, tendency to discontentment with immediate surroundings, all of which are more or less accentuated by a certain amount of worry in relation to family and other matters, complicate the determination of the mental attitude in such a way as to make many of the records of little value. Dr. Horace Carncross has made a special report on "The Mental Attitude in Tuberculosis" (vol. ii, p. 137, Phipps Institute Report), in which he says: "The impression one gains after a series of inquiries from the patients themselves as to their mental state is that the greater number are more or less depressed, though they still retain the hope of improvement or cure. They do not express excessive trust in their future physical welfare, and when they have expressed unreasonable confidence it has usually been due to ignorance of their true physical condition. On the other hand, that they should be depressed there is every reason to expect, because of the lowered vitality and the knowledge of bodily harm they are undergoing, together with altered circumstances, is in itself sufficient to cause depression.

In order to truly grasp the fulness of the psychologic aspect of the case, it is necessary to know the original temperament of the patient, which in many cases has been that of buoyancy, a sense of well-being, etc. The question, then, as Carncross presents it, is, not are tuberculous people optomistic, hopeful or cheerful or anything else, but do they undergo a change of mental state? In answering this, it is presumed that chronic illness rather than tuberculosis, specifically, may be responsible for the change. But that there are distinctly morbid psychologic states which can not be classified as insanity is beyond doubt true, especially in the latter stages. The commonest picture is that on which the patient is morose, irritable, quick to suspect, ready to find fault, perverse, antagonistic, sometimes almost abusive, perhaps highly emotional, skeptical, pessimistic and difficult to control. Dr. McCarthy believes that tuberculous patients reflect the mental attitude of the physician in charge of the case, optomistic if the physician is of a hopeful disposition and depressed if he is skeptical.

The insane states encountered in tuberculosis have been studied by a number of observers, dating back to the time of Esquiral. The more recent literature, especially of French writers, has given a clinical classification to the insanity of tuberculosis. All varieties of insanity have been encountered, but Clouston, in his analysis, says that "the most common form is that of suspicion," a paranoid state in the classification of to-day.

McCarthy divides the insane states met with in tuberculosis into two

classes: First, a group peculiar to itself; second, a group including the usual types of insanity determined by a lowering nutrition. In the first group are found patients who may be absolutely hopeless and yet be happy and contented in this knowledge. When they are hopeful they are very hopeful, and in consequence this mental attitude leads to unreason. They belong to the allied paretics, and for this reason are called the paretic type. Another class are those of depression, which may eventuate into melancholia, morbid suspicion, persecution, etc., being the class described by Clouston.

In the second group are found all of those forms which are associated with lowered nutrition, viz.: mania, melancholia, dementia præcox, hysterical insanity and delusional insanity. I have met quite a number of insane people ill with tuberculosis and have noticed this association in early stages of tuberculosis, and later in the terminal dementia stages it is not uncommon, but here it is the consequence of the dementia.

Time will not permit further discussion of this subject, which is one of great interest and becoming more so as we learn more of the clinical pathology of the disease, tuberculosis. I have tried to cover the subject assigned me by the officers of this Section as gleaned from current knowledge of the disease, as well as from my own limited experience in the detailed study of the neurologic and psychologic phases of tuberculosis.

TUBERCULOSIS OF THE OCULAR STRUCTURES.*

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Although it is universally known that tubercular processes invade the eye, the extent and frequency of that invasion are not generally recognized. This ignorance is by no means confined to the general practitioner; it is within quite recent years that ophthalmologists began to realize not only that ocular tuberculosis is relatively a common disease, but that many affections of the eye, now believed to be tubercular, were long attributed to other causes.

Almost every one of the numerous tissues and organs that compose the external ocular apparatus may be attacked by tuberculosis. If this be true, it will readily be understood that in a paper necessarily limited, only a cursory or general statement can be made regarding this interesting topic. I shall endeavor to confine my remarks to that part of the subject most likely to be of interest to others than ophthalmologists. A convenient division of ocular tuberculosis for the purpose of this paper is into extra-ocular and intra-ocular tuberculosis.

Extra-ocular Tuberculosis, Tubercle of the Lid Skin.—The tubercular character of lupus has long been known. Although the bacilli are present, they are demonstrated with much difficulty (especially in the microscopical sections) and inoculation experiments are often required to

*Read before the fifty-seventh annual session of the Illinois State Medical Society, May 21-23, 1907.

complete the diagnostic inquiry. The nodules do not differ materially in their inception, progress and complications from dermal tuberculosis in other localities.

Tubercle of the conjunctiva is probably much more common than is generally believed. I well remember, some ten years ago, having this fact practically demonstrated to me by my friend, Dr. Herman Knapp, who pointed out two cases in his clinic, diagnosed as phlyctenules of the conjunctiva, which were shown to be tubercles. In this connection it is well to remember the groupings of Sattler and Eyre, who, in 1890-1891, classified and described the various appearances of the conjunctival disease and then divided them into five distinct categories: First, miliary ulcers, generally found on the palpebral conjunctiva. They may or may not coalesce, but usually undergo a cheesy degeneration. These ulcers yield scrapings that contain bacilli indistinguishable from the bacillus tuberculosis.

Second, small subconjunctival nodules. These may be of a gray or yellowish color, in the former case resembling the "sago grains" of acute trachoma, or yellow, like the miliary tubercles of acute pulmonary tuberculosis. Sections of these miliary nodules plainly show collections of giant cells with groups of tubercle bacilli containing a few, rarely more than a dozen, bacteria.

Third, swollen, hypertrophied papillæ with rounded masses of granulation tissue, generally growing from the sulci, sometimes from the palpebral conjunctiva. These velvety outgrowths are associated with thickened and edematous lids. Eyre regards this form of conjunctival tubercle as an advanced stage of the second, or subconjunctival type, comparable to the spongy masses met with in tubercular arthritis. Sections show collections of round and polygonal cells, but no regular giant cell arrangement. Tubercle bacilli are probably always present, but, as they are few and scattered, it is difficult to locate them.

Fourth, a large number of pedunculated excrescences springing from the folds of transmission and resembling coxscombs. These lupous tumors occasionally show superficial ulcerations and are made up of masses of round cells and new vessels of the embryonic type. Tubercle bacilli are present, but are "few and far between."

Fifth, a peculiar tumor mass attached by a pedicle to the conjunctiva, like a fibroma or papilloma. This new growth is made up of a connective tissue stroma enclosing a mass of round cells with a few collections of giant cells. Tubercle bacilli are sparsely present in groups of from five to ten.

Doubtless many examples of each of these five classes of conjunctival tubercle have been mistaken for trachoma, phlyctenular conjunctivitis, Parinaud's conjunctivitis, papilloma and for other neoplasms of the conjunctiva. In one trachoma-like form Birch-Hirschfeld believed that it was probably derived from a bovine tuberculosis, teaching, contrary to the generally received doctrine, that cow and human tuberculosis are identical, or, at least, communicable from the ox to man.

The fourth class of (lupoid) cases are generally secondary to lupus

of the nose, face or larynx. Probably it is primary in most of the others; indeed, it is a most important question whether tubercle bacilli deposited from the air or rubbed in by the hand may not, as a result of traumatism of the conjunctiva, be absorbed into the system and result in a general infection. Herbert Parsons, for example, asserts that proof of general dissemination from a primary conjunctival lesion is yet wanting. Bearing on this contention is a recent paper by Cabannes,[1] in which he claims and brings evidence to prove that the conjunctival sac occasionally furnishes the gateway through which the tubercular poison enters the system. In most of the severe cases of conjunctival tuberculosis the preauricular glands are enlarged, followed by swelling of those at the angle of the jaw.

The prognosis *quo ad* the local disease is generally favorable. In otherwise healthy individuals curetting the actual cautery and disinfection of the operation wound generally brings about a cure.

Corneal Tuberculosis.—Just as the miliary forms of conjunctival tuberculosis may be mistaken for trachoma so undoubtedly has tuberculosis of the cornea passed current for interstitial keratitis.

Parker, in the July, 1906, number of the *Ophthalmic Record*, describes a case of tubercular keratitis occurring "in a woman, aged 36, who had been under observation for about a year and who continues to have the disease in an active form. The diagnosis was made because of its reaction to tuberculin. The cornea contains interstitial deposits near the margin which radiate towards the center. Near the cornea, in the sclera, there are deposits which give it a nodular appearance. These portions are injected and have a peculiar violaceous tint."

Bach (*Archiv. f. Augenheilkunde*, xxxii, 1896) speaks of deposits of primary tubercle in the form of small nodules. These are first deposited about the sclero-corneal junction, whence they gradually invade the corneal tissues and form ulcerations that show very little disposition to heal. Repair is followed by grayish, finger-like opacities. Bach further says that, inasmuch as the corneal tissues form a poor culture medium for the bacillus tuberculosis, the parenchymatous form of keratitis tuberculosa is probably due to the action of the toxins. Primary tubercle of the cornea is, however, very rare. When found it is generally the result of traumatism with subsequent infection of the wound. Such a case is reported by Greef from a finger-nail scratch. The ordinary cases of corneal tuberculosis are of the parenchymatous type, being mere extensions from the uveal tract with which the cornea is intimately associated. In still other instances it assumes the form of a sclerosing keratitis or of a more discrete series of deposits, more in the cornea proper.

Finally, cases that go on to caseation and present all the other characters, clinical and histological, of miliary tuberculosis have been carefully worked out and described in literature. Altogether, considering the comparative rarity of the corneal disease, there is, perhaps, no ocular tissue that presents such a variety of lesions and appearances and simulates so closely the tissue alterations of other infections that one may well

1. Archives d'Ophtalmologie, January, 1906.

suspect that a goodly percentage of the anomalous forms of corneal deposits and ulcerations so often encountered by the ophthalmic surgeon are tubercular in character.

Sclera.—Although primary tubercle of the sclerotic is practically unknown, it is often, like the cornea, invaded by uveal tuberculosis. In the latter case the lesions assume the character of caseating masses or, more rarely, have the appearance of an ordinary scleritis. Possibly the last mentioned form is but the first stage of the neoplastic nodules.

Intra-ocular Tuberculosis.—The most important contribution to this subject in recent years is the brochure of Treacher Collins, contributed to the Fifteenth International Congress of Medicine, Lisbon, 1906. It is based on his histological examination of eighteen eyeballs preserved in the laboratory of the Royal London Ophthalmic Hospital. Like the extra-ocular variety, intra-bulbar tubercle is more frequent in the first half of life. It is usually secondary to deposits in the lungs, intestines or other organs and generally requires the most careful cultural and other tests to determine its precise character. It must be remembered that, as a rule, the bacilli are comparatively few in number and the discovery of "giant-cell systems," with or without secondary caseation, may form the only proof of the tubercular ravages.

The aqueous humor is an excellent medium for the growth of the tubercular bacilli. The inoculation of a guinea-pig's or a rabbit's anterior chamber with suspected *materies morbi* usually furnishes conclusive evidence of the character of the suspected lesion. Within twenty days after such implantation the inoculation, if tuberculous, shows in iridic nodules that become confluent, fill the anterior chamber, invade the cornea, perforate and bring about a general infection from which the animal usually dies in two or three months. Finally, I need hardly refer you to the diagnosis of tubercular lesions of the eye by the use of Koch's tuberculin, new or old. An excellent paper on this subject by William E. Gamble and E. V. L. Brown may be read in *The Journal* of the American Medical Association for Oct. 14, 1905, in which this matter is fully discussed and its literature quoted. In their case of iritis tuberculosa there was a sudden, typical rise of temperature (2 to 2.5 degrees) on two separate occasions, accompanied by chills, pains in the joints, etc., after doses of new tuberculin (TR.). There were repeated local reactions when the physiological limit of 1 mg. had been reached. These took the form of marked increase in the ciliary injection and in the swelling and vascularity of the iritic nodules.

Regarding the clinical and in some cases other evidence for and against the primary character of intra-bulbar tubercle, the report of Dening[2] is of great interest. Of 91 cases investigated by him, 38 were absolutely healthy in other respects, there being no signs of general or other local tuberculosis before or at the time of the ocular invasion. Fourteen had a tuberculous history, but were healthy before and during the attack. Three had earlier signs of tuberculosis, but were healthy at

2. Archiv f. Augenheilk., vol. xxxi, 1895, p. 359.

the time of the eye disease. Seventeen had tuberculosis which was cured and the patients remained healthy.

The difficulty in deciding from the application of the tuberculin test whether an ocular tuberculosis be primary or not is the fact that, at some time or other, a large percentage of the living population has been the subject of a healed tubercular attack, more or less serious. A reaction may be obtained from dormant deposits that have not furnished the infectious material of the ocular disease. After all, probably clinical evidence should be accepted as conclusive in deciding whether a patient with ocular tubercle is to be described as otherwise "healthy" or not.

Tubercle of the iris generally appears in the miliary form as discrete, disseminated, yellowish nodules, 2 to 3 mm. in diameter. They are associated with a keratitis punctata, some pain and a mild degree of ciliary injection. These nodules may, later on, become confluent, in which case one or more circumscribed masses are formed that, continuing to proliferate, may fill the anterior chamber. Destruction of the cornea not uncommonly follows and perforation takes place; the tuberculous mass, with the iris from which it springs, protrudes through the opening, and a fungous, ulcerative, vascular tumor forms. This gradually undergoes caseous degeneration, shrinks, disappears within the diseased globe, the corneal or scleral perforation closes and a phthisis bulbi results.

A third form of iridic tubercle may be described in which the iritis is the principal clinical factor and resembles the same disease produced by syphilis. In this class of cases the iritic nodules are not clearly developed, from the tubercular standpoint. They do not proceed to the development of conglomerate masses, but shortly undergo cheesy changes associated with considerable thickening of the iris.

From the foregoing description it will be seen that in iris tubercle the prognosis is not necessarily bad; even the most destructive processes may subside and undergo eventual cure, with or without destruction of the intra-ocular tissues and loss of sight.

Tuberculosis of the chorioid occurs, first, as discrete, miliary nodules scattered over the fundus and seen with the ophthalmoscope as gray patches, or, second, as a mass of caseating tissue formed beneath the detached retina. In the first class, which is by far the more frequent, both eyes are affected, the miliary bodies (numbering from three or four to forty or fifty) being more common near the disc. The nodules vary from the size of a pin point to 2 mm. in diameter. The mirror shows these deposits as round, whitish-yellow spots, somewhat raised above the general level of the fundus. They are rarely ever pigmented, and may make their appearance in a very short time.

The heaped-up mass of tubercle, constituting the second class of chorioidal tuberclosis, resembles in its growth and symptoms glioma of the retina. There is detachment of the retina, rapid growth forward of a yellow-white tumor, plus tension, etc. General miliary tuberculosis is said by some writers to involve the chorioid, sooner or later, in three-fourths of all cases.

Tubercle of the ciliary body, according to Treacher Collins, begins

most frequently in the ciliary processes on the inner surface of the ciliary muscle where its ciliary plexus is finest. It here occurs, as in the chorioid, in the form of scattered miliary bodies or as a single conglomerate mass with secondary nodules that are generally the seat of caseation. In most instances the vitreous is affected with fibrinous exudates and cellular hyperplasia, but not with genuine tubercular deposits.

Tubercle of the retina is much rarer than chorioidal tuberculosis. So uncommon is it that not even in long-standing disease of the underlying membrane is the retina involved.

The crystalline lens, being a vascular body, can not be the seat of tubercle, but the interference with its nutrition by the disease in surrounding tissue indirectly produces an opacity—a secondary cataract.

Tuberculosis of the optic nerve, originating in its pial sheath as discrete nodules, may become confluent and surround the nerve with a diseased ring. It may also extend into the nerve itself, destroying the conducting elements. It may produce a proptosis or an optic neuritis of the "choked disc" type.

Treatment of Ocular Tuberculosis.—In some respects the care of a case of ocular tuberculosis does not materially differ from the treatment of the general infection of which it so often forms a part, but, considering the fact that in many cases even of serious intra-ocular tubercle the nodules become absorbed and a partial return to normal conditions takes place, one is encouraged to make use of such remedies as are known to be most likely to bring about resolution. It is not necessary to specify any of these except a few that seem to exert a particular influence on the eye. Any treatment should be guided by estimating the opsonic index of the patient. This has been of great assistance in guiding the conduct of a number of reported cases, for example, in an instance recorded by Simeon Snell (*Transactions of the Ophthalmological Society of the United Kingdom*).

The use of tuberculin injections and the eradication of the nodular deposits in external ocular tubercle have already been mentioned. The introduction of iodoform and the injection of air into the anterior chamber are sometimes of decided benefit in tubercle of the iris. For the more deeply seated lesions they do not seem to be of much use.

THE DIAGNOSIS AND TREATMENT OF LARYNGEAL TUBERCULOSIS. SOME UNUSUAL TYPES. AN ANALYSIS OF FIFTY-THREE CASES.*

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To promote recovery, an early diagnosis is just as essential in laryngeal as in pulmonary tuberculosis, and an early diagnosis is necessarily based upon the laryngeal image, although in certain unusual types every possible test is required for confirmation or exclusion.

*Read before the fifty-seventh annual session of the Illinois State Medical Society, May 21-23, 1907.

The earliest definite lesion is laryngeal hyperplasia or infiltration, which is usually bilateral, diffused rather than circumscribed and of a pallid or pale florid hue. It affects particular anatomical features of the larynx approximately in the following order and manner: First, the interarytenoid fold, on the front surface of which appears a rugous or warty outgrowth. Soon afterward, around the vocal processes appear similar but smoother and smaller, uneven prominences. These by merging with the swollen interarytenoid at its movable angles of convergence with the posterior ends of the vocal cords lead to the formation of characteristic flexion fissures in the swollen tissue at these angles. Next, one or both arytenoids are affected with the classical pyriform edematous infiltration, and conjointly the ventricular bands take on irregular tumefac-

Fig. 1.—Outline of the larynx for comparison with the other figures.

tion; the vocal cords, affected sooner or later, have a wavy outline or else appear as if duplicated along the whole or part of their length; and, lastly, the epiglottis, deeply infiltrated and edematous, assumes a grotesque turban shape, while dotted over its surface may be seen minute, yellowish-gray, tuberculous foci.

The second stage, that of ulceration amid the tumefaction, commonly supervenes within a year or so, the vocal cords, especially at the site of the vocal processes, and also the adjacent parts of the ventricular bands and arytenoid being prone to ulcerate early even at a period before the epiglottis has shown any infiltration.

As I have observed it, the particular point of earliest ulceration is at or near the angle of convergence of the vocal cord, ventricular band, arytenoid and interarytenoid fold, a spot which embraces, of course, the vulnerable vocal process and the same spot or angle at which a crease or

flexion-fissure has perhaps previously formed in the swollen tissue. This observation, taken in connection with the character of the ulcers, I believe to be of considerable diagnostic significance. The ulcers are of the mouse-nibbled or worm-eaten sort, at first small but multiple, progressive, tending to coalesce and not conspicuously interblended with cicatrices.

The third stage, that of the formation of granulation tissue or granulomata, is an abortive effort at repair; hence the presence of undoubted granulation tissue is indicative of an underlying, perhaps hidden, ulceration.

Of the three subjective symptoms, dysphonia, dyspnea and dysphagia, the first, that is, persistent hoarseness, is an early indication and should suggest examination, but it is of no diagnostic importance unsupported by the laryngoscopic image. Severe dyspnea is only an occasional terminal symptom, but minor degrees of obstructed breathing may appear at any time from various causes. Mere discomfort in swallowing first appears at the period of pyriform swelling of the arytenoids, but the excruciatingly painful swallowing which precludes the taking of nourishment and so hastens the end belongs to the period of infiltration and ulceration of the epiglottis, being, therefore, a late symptom.

Our most familiar impression of the course of tuberculosis of the larynx is that of a disease having a speedy development, persistent progress and rapidly fatal termination, and out of a total number of fifty-three cases, of private record, these characteristics pertained to a group of twenty; enough surely to explain, but scarcely to justify the general impression of utter hopelessness which prevails with respect to it. The ages of the twenty ranged from 18 to 65 years, with a mean of 36 years. They all were affected also with pulmonary tuberculosis. They all died in less than an average of a half year from the first examination and in less than one year and a half from the first onset of the laryngeal complication. Six of them suffered, in addition, from tuberculosis of the pharynx and tonsils or lip, and one had also an extensive apthous-like exudate of the pharynx. A single case will serve to exemplify this group, which, after its pulmonary analogue, may well be termed:

The Galloping Type.—Miss A. C., aged 27. Examination in December, 1898. Cough for eight months. Initial signs at apices of lungs. Tubercle bacilli present. In a case-book sketch was noted rugous hyperplasia of the interarytenoid fold, which extended on one side to the vocal process. At the second month another sketch showed pyriform swelling of the left arytenoid, ulceration at its junction with the vocal cord and extension of the infiltration along three-fourths of the left cord. Local treatment by lactic acid and later with iodoform was unavailing, and at the third month infiltration of the ventricular bands and epiglottis had entered the picture (Fig. 2). From the third to the sixth month she resided in Phoenix, but on her return at the seventh month the epiglottis had become turban shaped, ulcerated and very painful on swallowing so that inanition hastened the end at the eighth month.

Another group of four cases out of the total series of fifty-three was characterized by quite a different course, by extreme chronicity, by pronounced hyperplasia, long delay in the occurrence of definite ulceration, a minimum of pulmonary tuberculosis and good general nutrition.

Theisen,[1] Rhodes[2] and others have described examples of it under the title of "Hypertrophic Tuberculosis of the Larynx." I believe the cases are not as rare as their scarcity in literature would seem to indicate. Probably authors have not felt impelled to describe separately what is evidently only a variation in degree rather than a difference in kind, but the perplexities of diagnosis will justify the citation of a case as a representative of this variation, which, I think, would better be termed the:

Chronic Hyperplastic Type.—Mr. E. Z., aged 44, states that five years ago he first noticed a persistent cough and expectoration which culminated after four months in a pulmonary hemorrhage, but that with the exception of hoarseness and cough, he remained fairly well during the following two years, when the hoarseness increased and discomfort in swallowing began.

Fig. 2.—Case of Miss A. C.—Tuberculosis of the larynx; galloping type.

On first examination of the larynx, April 2, 1906, I noted the presence of a pale pyriform swelling of the left arytenoid region which blended with an interarytenoid thickening, a diffused infiltration of the left ventricular band which obscured most of the underlying vocal cord, left subglottic infiltration, which, with the tumefaction above, served to restrict the mobility of the left vocal cord, and a few warty excrescences which were just barely visible at the angle of attachment of the left cord with the swollen arytenoid. There was no ulceration. The entire right side of the larynx was approximately normal (Fig. 3). A single cervical lymphatic gland, located above the hyoid bone, was palpably enlarged, but being in association with hypertrophic tonsillitis it was of little diagnostic significance. On repeated examinations of the lungs, there were found at the right apex minor degrees of exaggerated resonance and fremitus,

1. Theisen, Trans. Am. Laryn. Assoc., 1903.
2. Rhodes, J. Edwin, Jour. Ill. State Med. Soc., February, 1906.

bronchovesicular breathing and prolonged expiration, but due allowance being made for the "relative dulness" of the right apex, the margin of variation was small. The cough was slight, but persistent, and the mucopurulent expectoration scanty. From but one specimen out of several examined did the Columbus Laboratory report "tubercle bacilli present, few, one or two to a field," this finding being verified both by Dr. Gehrmann and myself. Weight 131 pounds, a loss of 6 or 8; pulse, 80 to 100; temperature normal, from 97 to 98 4/5. Tested with tuberculin .005 at 11 a. m., the temperature rose by 11 p. m. to 100 3/5, with other signs of a mildly positive reaction, including moist rales at the right apex. Syphilis was denied and the therapeutic iodid test was negative. The infiltration at that time, while not entirely typical of laryngeal tuberculosis, certainly conformed more nearly to its characteristics than to either carcinoma or syphilis.

This patient has now been under bi-weekly observation for a year. The systemic treatment has consisted of rest from business, open-air living and sleeping and forced feeding; under which he has gained 16 pounds in weight; the average pulse rate has fallen to 72, the temperature runs under 98 2/5, the cough and expectoration are almost *nil*, tubercle bacilli systematically sought for monthly by experts have not again been found and, to quote the patient's own phrase, his "general appearance seems to belie his disease." The local treatment has consisted mainly of protargol, a mentholated emolient spray and rest to the voice, with strict avoidance in his case of all irritating applications. By the sixth month the voice had improved and all sense of discomfort in swallowing had passed away. The hyperplasia diminished only slightly, but enough to expose to view more of the underlying vocal cord and especially the warty excrescence at its angle of junction with the arytenoid, which in appearance was so characteristic that it served strongly to confirm the diagnosis of tuberculosis of the larynx, notwithstanding the unilateral limitation of the disease and the absence of ulceration. At the eighth month the hyperplasia of the arytenoid, while still soft and edematous as tested by a probe, underwent temporarily an enlargement to the extent that it pressed upon the opposite arytenoid and showed itself externally by a slight prominence of that side of the thyroid cartilage. Again, one thought of the possibility of carcinoma, opposed to which, however, was the total absence of lancinating pain, absence of definite nodulation or tumor formation, of hardness to the touch, of florid red or else gray coloration and the comparative absence of glandular infection.

It would have been possible to remove a fragment for microscopic examination, but to open a tuberculous infiltration of this character is liable by mixed infection to hasten disintegration. However, the hyperplasia soon retracted to its former somewhat improved state, and further confirmation of tuberculosis was received in a report from the Chicago laboratory of a histologic test.

The other cases of this chronic hyperplastic type, in all four out of the fifty-three, will be mentioned briefly, as they particularly afford an opportunity for reference to the various methods of treatment employed in them.

In the case of Mr. O., aged 52, the hyperplasia, already of four years' standing, when first seen in 1902, was almost identical with that of the

preceding case, excepting that it was typically bilateral. Little or no ulceration until two years later, when sudden involvement of the epiglottis with painful swallowing led to a decline in spite of the persistent use of *x*-rays and a return to the same favorable climate which had checked his disease in its earlier stages. Duration, seven years.

In each of the remaining two cases the hyperplasia was limited to the interarytenoid fold, but was sufficiently thick and firm to have caused long-continued aphonia by preventing a close approximation of the vocal cords. To restore the voice, the excess of tissue in one of them was excised by a double curette; hence, in confirmation of the diagnosis can be shown the tubercle bacilli in a section as made for me in 1893 by Dr. Elmer E. Simpson. In the other one a similar purpose was accomplished

Fig. 3.—Case of Mr. E.—Tuberculosis of the larynx; chronic hyperplastic type. Now of six years' duration.

by the galvano-cautery. Both survived, with the voice improved, for several years, but were eventually lost sight of and presumably should now be numbered among the missing.

Three other cases of the total series might be regarded as belonging to the hyperplastic type, but in one the disease has become arrested and will be so classed, and in two, as the hyperplasia had an exaggerated papillomatous aspect, it will emphasize a distinctive point in diagnosis to mention their salient features as representing:

The Verrucous Type.—As granulomata result from an extensive, albeit usually an abortive, effort at repair of tuberculous ulcers, their presence is generally regarded as evidence of either past or present ulceration, but in order to affirm the presence of ulceration on this evidence it

is very important and not always easy, as reflected in the foreshortened image, to distinguish granulomata from tuberculous papillomata, meaning verrucous infiltration, which to a small extent commonly antedates ulceration at the same favorite sites. Again, but more rarely, the verrucous formation may be so pronounced or diffused and may endure so long that it is liable to be mistaken for multiple benign or malignant papilloma.

Mrs. B., aged 48-53 years, duration five years. The infiltration commencing as a papillomatous outgrowth from the interarytenoid fold, afterward affected the vocal processes and adjacent angles of convergence of the cords and arytenoids, where the papillary outgrowth was unusually conspicuous and finally extended over the entire inner surface of the larynx, which appeared as if covered with a grayish warty film. Obstructive dyspnea supervened repeatedly, necessitating curettement to clear the space. When last seen a few months before the end there was not yet definite ulceration and no dysphagia, for the epiglottis had not become affected.

Before proceeding to the type which is capable of arrest or practical recovery and in order to render an account of the entire series, brief reference may now be made to sundry unclassified cases. One not heretofore mentioned was of interest from a diagnostic viewpoint because the disease affected only one side of the larynx and did not involve the opposite side until shortly before death. Altogether, three out of the series might be characterized as unilateral, but two of them are used in other classes. Three cases not otherwise grouped ended fatally after a slow course of from two to five years. Two more are known to have died who had presented evidence of mixed tuberculous and syphilitic infection of the larynx. In one not otherwise grouped, the ulceration first healed, but a recurrence after a year ended fatally. Seventeen are untraceable, of which twelve probably died after a medium course and five may or may not have survived, as when last seen they were resisting well. Aside from all others known to be living, and to be described in the next type, five patients are at present under observation, of whom two are failing and three are in a state of temporary arrest, appearing hopeful.

THE TYPE CAPABLE OF ARREST OR OF RECOVERY.

It will not seem inappropriate as the argument develops that locally healed or "arrested" cases should be designated as a type, for, while Herynog Krause and Lake have dwelt upon its surgical curability in a few suitably selected cases, I will seek to establish for laryngeal tuberculosis what is now realized with respect to the pulmonary disease—the fact that certain cases develop of themselves a natural resistance, sufficient, even independently of treatment, to arrest the disease. I propose to show that tuberculous hyperplasia can undergo resolution and that not alone the "simple ulcer" which may chance to affect a tuberculous patient, but real tuberculous ulcers as well, do occasionally heal and remain healed under circumstances in which the local treatment can have wrought but a minor part. Furthermore, these cases have in common other qualities which indicate a superior resistance and hopeful outlook, e. g., less diffused and progressive local lesions, restriction of the pulmonary affection, few bacilli, lower pulse rate and almost no emaciation. Negative qualities which

mean for the patient a fighting chance, provided he be forewarned by an early diagnosis.

Out of the total series of fifty-three, I have precise knowledge of ten practical recoveries or "arrests" of the laryngeal tuberculosis. The diagnosis was verified in one group of four out of the ten by the fact that they succumbed many years after to the underlying pulmonary tuberculosis, the laryngeal recovery having been verified both by examination and by prolonged immunity from throat symptoms.

Brief details of one of them, with references to the other three, will suffice to exemplify this subgroup.

In 1891, while on a visit in New Mexico, I examined Mr. S., an active business man, whose sallow complexion and sepulchral voice had attracted my notice and who was pointed out to me as a marvelous climatic recovery, then of eleven

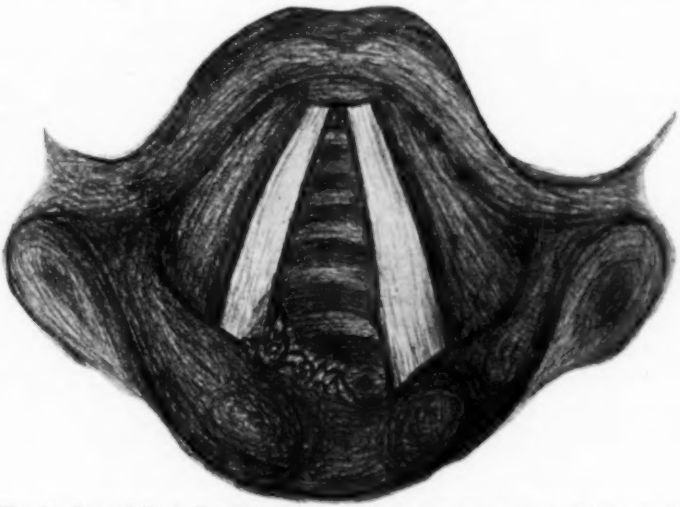

Fig. 4.—Case of R. A. L.—Tuberculosis of the larynx as seen seven years ago. Now in a state of "arrest."

years' standing, from laryngo-pulmonary tuberculosis. The examination, which he courteously permitted, left no doubt that the still perceptible but healed distortion of the larynx represented a former tuberculosis in a state of arrest. He died four years later, but without suffering any recurrence in the larynx during the whole period of fifteen years.

Mr. B., examined in 1895, had cicatricial indentation of one cord, the disease being then in a state of arrest with but slight interarytenoid infiltration remaining. He died nine years later, the larynx having remained well for a period of ten years. Both the diagnosis and arrest of the laryngeal disease were verified by Dr. Levy of Denver.

Mr. Fred B., of Texas, examined in 1893, had slight infiltration of the arytenoids and fold, the disease being then in a state approaching arrest. His son, answering my inquiry, states that the throat remained well until death ensued from tuberculosis of the bladder seven years later.

Mr. C., examined in 1894, had multiple small cicatricial indentations of one ventricular band, the ulcers having healed to remain healed a period of five years until his demise. Verification by Dr. Staples of Dubuque.

In three of the ten cases of arrest the evidence of a veritable tuberculous process is still more conclusive, as they were under my own observation for periods both before and after the healing.

Mr. R. A. L. First examination in February, 1900, at the age of 39. Moderate characteristic infiltration of the right arytenoid and of its angle of convergence with cord and fold and also of the aryepiglottic ligament (Fig. 4). Evident pulmonary tuberculosis, a few bacilli being found. Weight 155. The laryngeal symptoms began three months ago. I sent him to Colorado, where Dr. Gildea applied locally both methyl blue and silver nitrate. At the second examination, on his return in January, 1901, I was surprised to see that the laryngeal infiltration was gone, with scarcely a vestige remaining. Weight 196, pulse still 120, lungs in *statu quo*. At the third and fourth examinations in August, 1901, and in 1902, the larynx remained well. Weight 210, pulse 86, the lungs having improved somewnat. He was then residing at Pasadena under the care of Dr. Radebon, who states in answer to my inquiry of 1907, that Mr. L. is still living in fair health at Los Angeles, seven years in all.

Mr. P., aged 45, the diffused infiltration without ulceration was unilateral. Patient well nourished, even fat, which led to careful confirmation of the diagnosis. Copious expectoration, tubercle bacilli, evident pulmonary signs and a tuberculin reaction. It was in 1901 and he was treated with *x*-rays, which seemed in this instance to be of benefit, although they failed in other cases. After six months was noted, "larynx undoubtedly better but not well," and after eight months more, "continued reduction of the hyperplasia" was noted. Now, after six years, in answer to my inquiry, he writes: "I have gradually improved, only slight hoarseness and occasional coughing remain."

Mr. W., aged 23. First examination in 1893. Impaired voice for several months. Typically tuberculous laryngeal infiltration of the interarytenoid fold, which involved the left angle and vocal process. Tuberculous cervical adenitis and evident pulmonary disease. Re-examination five years later, he having been home a year following four years in Colorado. He considered himself well. The larynx showed a mere remnant of the former infiltration, and I have information up to the end of seven years of continued maintenance of the arrest.

In the final group of three cases the diagnosis of laryngeal tuberculosis was certified by my own repeated observation and confirmed later by others, but the evidence of its arrest is necessarily based on the facts as reported by the patients that they are now, after many years, not only living, but entirely well with respect to the larynx. In the one which is selected to represent this group, I think no one would doubt the tuberculous character of the infiltration as illustrated (Fig. 5).

Mr. J. W. D., clergyman, aged 27 when first examined in 1901. Voice impaired for a year. Pulmonary tuberculosis pronounced, but of slow progress. Infiltration of the interarytenoid fold and angles of convergence and ulceration in one fissure (Fig. 5), the local treatment consisting of seven curettements followed by lactic acid, extended over a period of six months, but when he afterward departed for Colorado the larynx, though improved, was by no means well. Now, after seven years from the start of his laryngeal complication, he writes in answer to my inquiry: "The larynx has been healed for over three years. . . . The voice is fairly strong. . . . The lungs are still affected, but my general condition is good." Verified by Dr. Gildea of Colorado Springs.

The others of this group (Mr. P. P. and Mrs. A.) were similar, but less advanced. In one the diagnosis was confirmed at Trudeau's Sanitarium, where he was treated by means of tuberculin R. for a short time. He writes at present, after six years: "The larynx does not trouble me at all. For the last four years I have been working right along out of doors in Washington State and pay no attention to lungs or larynx." The

other writes that she is living out of doors, was never healthier and the throat has not troubled her for three years.

Treatment.—Reference has already been made to approved methods of local treatment, and, although they may have seemed to have exerted but a minor effect even in that type in which the tuberculous process in the larynx eventually became arrested, nevertheless local treatment is always helpful and is sometimes indispensable; it is meant only that the general condition should not be entirely subordinated to the local means. The mentholated emollient spray mentioned contains menthol, 1; the oils of eucalyptus and gaultheria, each, 1, to yellow vaselin oil, 100. It is, within limits, a sedative to cough and pain and is suitable for home use. To it may be added the pure alkaloid cocain, 0.1, previously made in solution with olive oil, 5 gm. For the more severe dysphagia of the

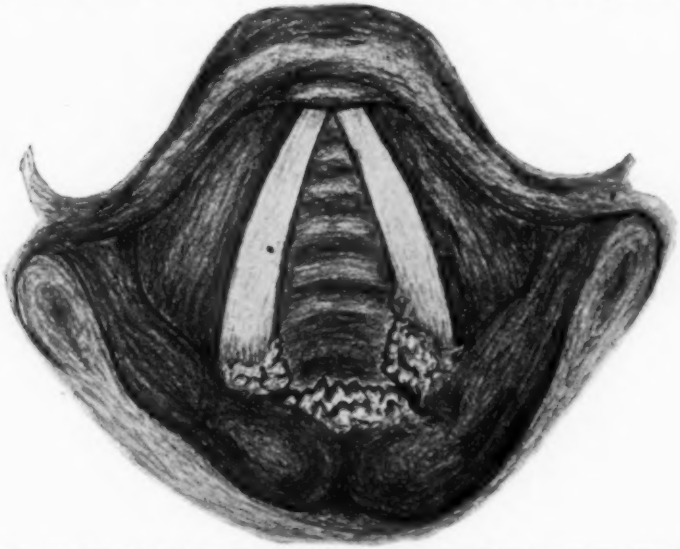

Fig. 5.—Case of Mr. J. W. D.—Tuberculosis of the larynx as seen seven years ago. Now in a state of "arrest."

advanced degree, cocain, 0.2, to powdered orthoform, 100, insufflated (even self-insufflated) in the dose of 0.5 gm., is the most satisfactory remedy, the percentage of cocain in it being harmlessly minute. To it may be added codein sulph:, 0.5 to the 100.

Lactic acid by friction and creosote by submucous injection are mildly escharotic in their effects and may be classed with surgical methods as requiring the wisest selection of cases and the most skilful application if one would by means of them accomplish good rather than harm; however, they are each and all capable, in isolated instances, of effecting an arrest or of prolonging life. The abscission of a tuberculous epiglottis is a beneficent measure if only for the removal of an agonizinz impediment to the swallowing of food.

Practical experience is yet limited with the treatment by tuberculin in the very minute dose of a thousandth of a milligram, and by other vaccines or sera, the scientific purpose of which is to augment resistance as measured by the opsonic index, but it presents an encouraging outlook.

It is evident that in the 20 per cent. of "arrests" which my series affords the most powerful curative influence was exerted by life in the open air, with all thereby implied; but it is equally evident that unnecessary privation and distress will follow in the wake of an indiscriminate exposure to the elements or to the hardships of travel in distant climes of patients of the galloping type or other advanced incurable cases. One should seek first to differentiate that type which is capable of arrest and, secondly, both in it and the others to make an early diagnosis, as by so doing we are empowered to hold out a larger measure of hope in the presence of what must still remain the most dangerous complication of pulmonary disease—laryngeal tuberculosis.

34 Washington Street.

DISCUSSION ON SYMPOSIUM ON TUBERCULOSIS.

Dr. J. W. Pettit, Ottawa:—Mr. President, I believe my part of the discussion is confined to the papers on the management of tuberculosis and the sanatorium treatment of the disease. I do not believe it is very profitable in these discussions to rehearse what the speakers have said. Therefore, I wish to emphasize that tuberculosis can only be said, with any degree of accuracy, to be curable in its incipient stages. When we speak of the curability of disease, we mean a large number, or at least a majority, of the cases. There is no question but that in exceptional cases we get some very remarkable results in those who are far advanced, but the ultimate results in the treatment of the far-advanced cases are not very satisfactory. The success of treatment depends on emphasizing, again and again, the necessity of confining our work more largely to incipient cases, the treatment of which is eminently successful and satisfactory. I do not hesitate to say that if we could get these patients in the incipient stage (and by incipient stage I mean that in accordance with the classification laid down by the National Association of Tuberculosis), and look after their environment and treatment, we could get as good results as in the treatment of typhoid fever.

"A chain is no stronger than its weakest link." The weakest link in the treatment of tuberculosis is the patient himself, and next to the patient, his friends. We do not recognize the importance of the psychical side of the treatment. By this I mean we do not recognize that it is necessary to surround the average patient with a pleasant environment. There is no question about the curability of the vast majority of incipient cases, but the results fall far short of the possibilities, because the patient will not accept the conditions we prescribe for him. Especially is it difficult to get a patient to accept the necessary time limit. For instance, a patient who should be under treatment for six months will accept four weeks or six weeks, or at most three months. What is the result? He goes home apparently cured, so far as his appearance is concerned. He thinks he is all right and that the disease has been arrested. Some untoward circumstance occurs, or some indiscretion is committed, and he goes to pieces, and his case is reported as another failure. The fact is most patients and their friends make the unfortunate mistake in believing a cure has been effected, when the disease is simply arrested, or, in other words, when they have gotten rid of the mixed infection. As a matter of fact, when this stage of the treatment is reached the actual fight against the disease has only commenced. They have simply gotten rid of the mixed infection. Not infrequently when the patient has regained his normal weight, and all the bodily functions are being performed normally, he thinks a cure has been affected. Until such misconcep-

tions are corrected we will not secure the results from the modern treatment of tuberculosis that we should obtain. The more I see of the possibilities of the treatment, the more I am convinced of its value. But there are certain conditions operating against the success of the treatment which must be remedied.

The modern treatment of tuberculosis is just now threatened with the same danger which has discredited other valuable therapeutic measures in the past. The people, and many of the profession as well, have exaggerated opinions as to what can be accomplished and the conditions necessary for success. Professional and lay sentiment must be changed in many important particulars if we would save the treatment from falling into disrepute. We should preserve it for the good it can do by not undertaking the impossible. Two important facts must be borne in mind: First, we must recognize the limitations of the treatment, and second the conditions, limitations as to curability by confining ourselves to incipient cases. Under present conditions probably not more than 10 per cent. of patients admitted to private sanatoriums are in the incipient stage. More than 50 per cent. are advanced, and the remainder far advanced. These are the conditions which we must meet at present. If the value of the treatment is based upon the results obtained under present conditions, public and professional expectation will not be met. This, however, is not a fair test and those most actively engaged in the work know it is not and are sounding the note of warning. The value of the sanatorium should not be regarded simply from the standpoint of a curative agency, but as an educational institution. This is its largest field of usefulness.

The number of patients that are being cured under present conditions is unfortunately too small for the reasons given. The educational value that comes through these patients, when they are discharged, is very large, and a patient, whether benefited or not, when he returns to his home will not be a menace to his family and friends. Each patient will be a center of influence in spreading the knowledge necessary to prevention. If we accomplished nothing more than this the sanatorium would be worth all it costs. But we can do more, and we will do more if we can only have it thoroughly understood that it is only in incipient cases we should expect the best results. There is probably no problem in medicine—certainly none that we regard as serious—that is more inviting than the treatment of incipient tuberculosis, and none more discouraging or disappointing than an attempt to cure far-advanced cases. Out of fifty-three or fifty-four cases, treated at the Ottawa Tent Colony (far-advanced cases), we obtained what seemed to be permanent results in only three. There was enough expenditure of money and energy on those fifty-three to have restored to health twice the whole number, if taken in time. There is enough money and energy being expended in the work to-day to take care of practically all the people who have tuberculosis, if it were only expended aright. We are wasting our money and energy in not taking these people at the right time.

The treatment is not easy, either from the standpoint of the patient or of the physician. We must not lose sight of the fact that in the application of the treatment we must reckon with the individual. He is not consciously sick and that makes him a difficult problem. It is really pathetic to see how anxious these patients are to get well when suffering from the active symptoms of the disease. They are ready to do and to promise everything, but as soon as they get rid of the mixed infection and begin to feel well and look well they think they are well and either give up the treatment or through some thoughtless indiscretion, such as a visit home, overexercise, lose in a few weeks what it has taken them months to gain. Then they are penitent. They are ready to submit again to treatment, but unfortunately there is no absolution from their sins. Repentance comes too late, for the reason that when a patient relapses it is always more difficult and not infrequently impossible to regain that which is lost. The patient and his friends, as a rule, are more of a problem than the disease. Some one has very wisely said "tuberculous patients are apt to die from their disposition rather than their disease." This unfortunately is true. It requires the same elements of character to succeed in the fight against tuber-

culosis as for obtaining success in the ordinary affairs of life. The intelligent, courageous, persistent patient, with an opportunity, may get well. The dissolute, fickle and unstable patient rarely ever, and this without regard to the stage of the disease. After all, it is not so much a question of who is curable as who will be cured. We are apt in discussing this question to look at it simply from the physical side, ignoring the fact that the patient is a free moral agent and a cure can not be effected without his cooperation. The easier we can make it for the patient the less danger there is of failure. This can only be done by making an early diagnosis which shortens the time and makes less rigorous rules necessary.

Dr. Ethan Allen Gray, Chicago:—Speaking about the social aspect of tuberculosis, I think if there is any one thing which we should regard as the crux of the situation, it is the importance of tuberculosis in children. In investigating the large percentage of all deaths from tuberculosis in two large cities of this country, we found 13 per cent. in all cities of which I have recent information, namely, New York and Philadelphia; that is, 13 per cent. of all deaths from tuberculosis occur in children under the age of 5 years. That takes into account a large number of cases of tuberculosis which occur among children of that age under those years. It gives the idea that possibly we have a clew to the reason why we have tuberculosis occurring in the later years of adolescence. Of course, when we remember that there is such a thing as latency due to heredity, or latency due to the infection of children from tuberculosis in the parents from accidental infection, we can readily understand the recent work of one of the German pathologists who found virulent and very active tubercle bacilli in calcified glands after years of apparent cure, and there is no doubt that to-day we have latent tuberculosis, and through some intercurrent disease, such as whooping cough, measles or influenza, we may have reason for the great increase of tuberculosis following epidemics of la grippe. If we can prevent the recruiting army of consumptives from year to year and from decade to decade, it can only be done by going after the children. That is where the fight will be.

Dr. Favill has pointed out that we might not see any results for another generation. That may be true. I think we will see results in a certain way if we can cut down the death rate in infancy. We can do something there, and the next generation, if we are fortunate, may see a material reduction in the adult death rate, and it is here where social workers must concentrate their energies. Of course, that means they will have to stand between the children and the consumptive himself. Such institutions as the various antituberculosis societies, both national and local, have that in charge, and we must recognize the influence of them, both in this country and abroad.

That brings up the matter of early diagnosis, and that is one of the most important things of all. With reference to what Dr. Butterfield said in regard to the incipient cases of tuberculosis, we may take a child anywhere from childhood up to adolescence and follow it through the history of delicate health. It may be noticed that a child, who is growing rapidly, is not doing first class; the child is breaking down from ordinary school work. Such cases as that are in a condition to break down; they run slight temperatures under the slightest provocation; they may have more or less glandular involvement from time to time, and are prone to such infections. If we could go over these cases carefully we would find some focus of infection. This focus of infection might be difficult to discover by a superficial examination, but if we give the child the benefit of the doubt, and treat it as a possible case of tuberculosis, we might cut off one more recruit, and I believe that is what we have got to do if we wish to cut this thing short.

Dr. Harold N. Moyer, Chicago:—I have listened with great interest to this discussion, which has been singularly limited to the pulmonary form of the disease, and it is time we should do something for the glandular, nervous and bone forms of tuberculosis that are so frequent, and from which so little benefit is derived from ordinary hospital treatment. It is really pitiful to see children and adults in hospitals with tuberculosis involving many organs in which the

same open-air treatment, as applied to the pulmonary form, would be efficient, and perhaps more so than in the pulmonary form of the disease.

Dr. William E. Quine, Chicago:—Nearly every one who has spoken has dwelt upon the importance of the early diagnosis of pulmonary tuberculosis; and one of the essayists appeared to convey the implication that the diagnosis should be established before cough and expectoration occur and before there is marked elevation of temperature, acceleration of pulse, or obvious deterioration of the general health.

It is admitted that in a large proportion of cases an unequivocal diagnosis is not declared early enough to give the patient a fair show for his life. There is abundant reason, therefore, for urging greater attention to this awful problem.

But how are we to make a safe diagnosis in the absence of a cough, expectoration, bacilli, temperature and pulse disturbance and general deterioration of health? It can not be done. Of course, considerations of prudence compel us to give the patient the benefit of the doubt in every case and even before there are adequate grounds for a diagnosis.

Very few physicians are sufficiently familiar with the refinements of physical diagnosis to be willing to base conclusions upon such findings in the absence of confirmatory evidence of pulmonary disease; and even yet too few use the microscope in diagnosis.

What is to be done, then, by physicians whose diagnostic resources are not adequate to the early recognition of pulmonary tuberculosis upon the basis of physical exploration of the chest or of microscopic examination of the sputa? I know of no better proceeding—available alike for all classes of practitioners and quite warrantable when a positive diagnosis is demanded—than the use of tuberculin. This will enable the halting and undecided physician to speak with authority and in time to give his patient a chance for his life.

Dr. Robert B. Preble, Chicago:—I wish to say a few words in regard to the early diagnosis of tuberculosis. There is one fact we should keep distinctly in mind, and that is this: According to the most recent and most careful postmortem studies that we have, a series recently reported covering many hundreds of cases, it is more than probable that every individual beyond the age of 18 has tuberculosis or has had it. When any individual comes to you with a suspicion of tuberculosis, it is possible that there is some reason for believing that he has tuberculosis. Anyone who has had considerable clinical experience may see tuberculosis in a hospital when it is possible and probable. What follows if you make a diagnosis of incipient tuberculosis? In other words, what is the result to the individual? Formerly, when you said to an individual that he had tuberculosis, that meant a radical tearing up of his lifework, so to speak, a radical change in climate and in his manner of living, a thing which, in the vast majority of cases, is absolutely impossible. To-day, what does it mean? It means that the individual must live and lead the right kind of life. He ought to live in the open air, with the proper kind of diet, and with a sufficient amount of things to keep him busy. That is not only true of the sick person, but it is equally true of all of us. If you believe that a certain individual has tuberculosis, you should instruct him as to the way in which he ought to live. If you should make a mistake and he has not tuberculosis, it may reflect on your professional standing, but if the individual should live until he is 60 or 70 years of age, I would not consider it any reflection on you, and if you made an error in diagnosis, what difference does it make? You have directed that individual into the kind of life that all of us ought to be living.

Dr. Edward H. Ochsner, Chicago:—While I have had almost no personal experience in the treatment of pulmonary tuberculosis, the problem which presents itself to me when I see these patients in consultation or when they come to me for diagnosis is what shall I advise them to do and how can I best get them to follow this advice.

Only a few weeks ago I had an experience which taught me a good lesson. A physician brought a patient to my office, and after making a diagnosis of pulmonary tuberculosis, I advised the patient to go to a sanitarium. He asked me

how long it would take him to get well, and before I could answer the question the family physician answered that he would need to stay only five or six weeks, and here comes the point that Dr. Pettit laid so much stress upon. It was impossible for this patient to get well in such a short time, and if he went into a sanitarium with this false idea it would be almost impossible for the sanitarium people to keep the patient long enough to do him any good. I think in their attempt to persuade patients to go to tuberculosis sanitaria physicians very often greatly understate the time which is required for the patient's recovery, and thereby do untold mischief. I have sent quite a number of patients to sanitaria always with the distinct understanding that they were to remain there as long as the physician in charge deemed it necessary, and I am glad to say that they have all returned home entirely recovered. While my indefinite statement as to time required may have kept some people away from the sanitarium, I am sure that the sum total of good done has been greater than if I had not emphasized the necessity of staying so long.

In reference to the question of early diagnosis of tuberculosis, I wish to relate a recent experience. Within the last two weeks I have had under my care four patients, three of whom came with the diagnosis of tubercular glands of the neck, while the fourth came with the diagnosis of tuberculosis of the knee. We immediately proceeded to take the opsonic index of these patients. Case 1 had an index of .5; Case 2 an index of .6; in Case 3 the index was normal, 1; in Case 4 the index was .96. We found that Cases 1 and 2 were suffering from tubercular cervical glands in the acute stage; Case 3, whose index was normal, had a displaced right thyroid, which had been mistaken for tubercular glands; Case 4 had an almost completely healed tuberculosis of the right knee, the tubercular process having practically subsided. To me these four cases were most instructive. To determine by a reasonably reliable method whether the process be acute or chronic, whether active or nearly healed, is of the greatest importance to us. While it is usually relatively easy by the study of the opsonic index to tell whether a patient is suffering from acute tuberculosis or not, it is more difficult and often quite impossible to tell whether they are suffering from chronic or healed tuberculosis. However, practically this is of less importance because the thing which we especially wish to know is whether the process is active, and if it is in an acute stage then it is our business to treat it by the use of the Wright vaccination treatment in conjunction with the other well-established and reliable methods.

Dr. J. W. Pettit, Ottawa:—I was pleased to hear what Dr. Quine said with reference to tuberculin as a diagnostic test. Tuberculin is perfectly safe when used properly. There is only about 4 per cent. of error, and it is more exact than any physical means of diagnosis we can make.

Just a word with reference to the fear of being discredited because of making a mistake in diagnosis. Where there is any doubt whatever, the patient and not the disease should be given the benefit of the doubt. This will always operate to the advantage of the physician. In the past eight months we have had three cases sent to us with a mistaken diagnosis of tuberculosis. In each of these cases the physician who sent them stood higher in the estimate of those patients than he could possibly have done by making a positive diagnosis after the disease had been even moderately advanced. It is no reflection to make such a mistake. It goes to show that he is extremely careful, and that is his highest recommendation to the patient. We had an intelligent lady sent to us from a neighboring city by one of the best diagnosticians, and he had diagnosed it one of incipient tuberculosis. After some weeks it proved that she did not have that disease. We sent her home rejoicing, and I never heard any one give a physician such praise as she did that man. She not only rejoiced that she did not have the disease, but also that she had fallen into the hands of such a careful and conscientious physician. I am sure that it will always operate to the advantage rather than the disadvantage of any physician who is extremely careful even to the extent of making an error in diagnosis.

Dr. E. V. L. Brown, Chicago:—In connection with Dr. Wood's paper, I wish

to emphasize the frequency of ocular tuberculosis. It has been held for many years among ophthalmologists that the great majority of corneal, and in particular chorioidal disease, was due to syphilis; but the pendulum is swinging to the other side on the basis of a great deal of experimental work, and the most accurate statistics we have recently show in a large series of cases that tuberculosis was proved to be the definite etiologic factor in 29 per cent., whereas lues could only be determined in 33 per cent. Those statistics came from Professor Michel and Professor Haab, and in an article recently contributed it is stated that disseminated chorioiditis, which has been looked upon as syphilitic, is now in all likelinood tubercular.

As to the other point, whether or not tuberculosis in the eye is primary, or whether the eye is the primary atrium of infection, I will say that some interesting work has come from Koch's laboratory by Cornet, in which inoculation of the healthy conjunctival sac of lower animals with tubercle bacilli was made, without any abrasion of the epithelium whatever, and the first infection being found not in the conjunctiva itself, but in the preauricular glands, and later a general tuberculosis and death, showing we have inoculation of the healthy intact conjunctiva or structure, without any local manifestations of the disease, and later a generalized tuberculosis. This shows, too, the extent of the disease in certain structures, which might be mentioned. Verhoeff, of the Massachusetts Eye and Ear Infirmary, in a recent article contributes a series of twelve cases in which there was a marked episcleritis; he got a definite tuberculin reaction in each case, and only in two cases of the twelve was there any general tuberculosis, so that we may assume that the external structure of the eye here was early infected before the general tuberculosis had occurred.

Dr. William E. Gamble, Chicago:—Michel and his students, whose work has been referred to by Dr. Brown, have taken very extreme views on this question of the frequency of tuberculosis of the eye. As far back as 1895, Bach, one of Michel's students, made the statement that one-half of the cases of iritis that he observed were due to tuberculosis. Such a statement makes one hesitate in accepting some of their conclusions. Here in America it could not be considered seriously, for tuberculosis of the iris is one of the greatest rarities.

The experiments of Otto Kunz and Prof. A. E. Wright go far toward clearing up the etiology of phlyctenular keratitis and conjunctivitis. More should be said as to the etiology than that it is a strumous condition manifesting itself commonly in childhood. Kunz injected under the skin dead tubercular bacilli which produced typical phlyctenules in the lower animals. Students of Professor Wright have found that in phlyctenular keratitis and conjunctivitis the opsonic index varies from that recorded in health either above or below, while in other forms of conjunctivitis the opsonic index is normal. It is possible that the toxins produce pathologic changes in the eye. This I think may be true of diseases of the cornea, especially interstitial keratitis.

Treacher Collins has pointed out that a tuberculous patient may have iritis without any evidence of there being foci of tuberculosis, such as nodules, etc., in the iris. Iritis, in these cases, he ascribes to toxins.

There is one point that might be further elaborated, and that is, the tuberculin treatment for local tuberculosis. Both Koch and Wright have taught us that tuberculin injections, when used in local tuberculosis, that is, tuberculosis of the glands, lupus, tuberculosis of the bone, have a definite value. In more than 50 per cent. of the cases of tuberculosis of the eye so far reported no other foci of tuberculosis have been discovered. In a considerable per cent. of the remaining cases reported other foci have been demonstrated, but not systemic tuberculosis, so that tuberculosis of the eye can be considered for therapeutic purposes, a localized tuberculosis. The experience of von Hippel and others in the treatment of tuberculosis of the eye by tuberculin injections, has been almost as satisfactory as has the work of Professor Wright in the treatment of localized tuberculosis.

I believe that ophthalmologists are using too large doses of tuberculin in the treatment of these cases. If Professor Wright's work has taught us anything, it is that the large doses, producing clinical symptoms, are a positive harm. It

is probably true that doses of not more than .001 mg. are necessary to be used in any of these cases and that the interval between doses had best be determined by having the opsonic index taken two or three times. After that, treatment could be carried on, keeping the same interval between the doses as was indicated by the opsonic index.

Dr. M. S. Marcy, of Peoria:—I wish to refer briefly to the paper read this morning by Dr. Favill on the social aspect of tuberculosis. That is presumed to be one of the most important things connected with this whole subject. I think you will all agree with me that it is more important to prevent disease than it is to attempt to cure it after the patient has it, and I believe the proper time to educate people is in their youth. We know that when people become old, as some of us are, they become a little obstinate, and they do not take to learning as easily. On the other hand, the child's mind is susceptible and will receive any impression that is made upon it. Its mind is elastic, so to speak. Therefore, it occurs to me that if the children in our schools were given lessons on this subject, the next generation would know a great deal more about the prevention of this disease than we do in this age. The right thing to do is to take a girl, who has arrived at the age of 10 or 12 years, and give her a course of training in our public schools in the way of preparing foods, teaching such girls how to cook, in other words. We find many, many young ladies growing up who do not know how to prepare food, how to cook. They get married, and they do not know how to prepare and cook food properly. Therefore they go through life eating improperly cooked food, indigestible food, and consequently their bodies are in a weakened condition. Such people are more susceptible to tuberculosis or any other disease with which they may come in contact. Weakened constitutions can be built up by proper food.

Dr. Favill (closing the discussion on his part):—There is so much food for thought in the discussion of this subject, that I shall only take your time in referring to one or two points. Dr. Quine has given you a faithful and graphic portrayal of the clinical difficulties connected with the early diagnosis of tuberculosis. There is one thing he said that fits in with what I want to say. I came here to discuss the social aspects of tuberculosis, and I said it was not finally a physician's problem; that it must be a community work. I think we will all agree to that. There is no question, however, that although the medical profession can not carry this thing to its ultimate consummation, it can infinitely block its progress toward a consummation by lack of wisdom and essential morality in its attitude as a body toward this problem.

I said in my paper that the problem of dealing with tuberculosis in small communities was a comparatively simple matter. Theoretically, there are involved in it two distinct factors which are closely reciprocal. On the one hand, that great problem of the solidarity of the profession. On the other hand that curious psychology of the patient so graphically portrayed by Dr. Pettit and others, which is absolutely related to and reciprocally swayed and influenced in proportion as this solidarity of the profession is positive or negative. The solidarity of the profession is not so serious a matter except in its broad scientific lines in a large city, because men go along their own paths and think of whatever there may be in their own circle, and there is not very much interplay between one individual and another. The clientele of men is so separate that the influence of one man on another is not great. The play back and forth between men in small communities and in the country is absolute and intimate, and we can not get away from it. I know, because I practiced in the country longer than I have in the city, and I know every phase and every shade of it, and I am not trying to find fault with the situation. But, after all, so far as this problem is concerned, the reputation of a medical man, who makes an early diagnosis of tuberculosis, and perhaps is mistaken about it, except so far as the intelligent individual patient noted by Dr. Pettit is concerned, may be made or marred. The reputation of a medical man in a mistaken diagnosis on that basis is made or marred, by whom? By his fellows in the medical profession, and Dr. Quine and all of us know perfectly well whether we are blameless or not. We know perfectly

well that the solution of that problem, so far as it influences the people, rests with the medical profession, and we must stand together not only in our scientific knowledge, but in our moral attitude with regard to one another in this matter, and when we, instead of being the comforting creatures for our dissatisfied patients, stand as enlightening factors in the community with reference to the true attitude and activities of the profession, then what I have said about the problem of tuberculosis in the small community and in the country being simple will be true.

Dr. Wheaton (closing the discussion on his part):—I sincerely hope that Dr. Quine did not misunderstand me, for when I alluded to what constitutes early involvement, I mentioned slight initial lesions limited to the apex of one lobe. I firmly believe that we may have early involvement without the presence of tubercle bacilli in the sputum and expectoration, without rapid pulse, or other symptoms which go to make up a clinical picture of tuberculosis. I believe that the family history is important in these cases. While I do not believe in a tuberculous heredity, yet I am of the opinion that we inherit a diminished physiological resistance to disease. I believe puny children in families should be watched carefully, as we know if we find tuberculosis in the mother or father, or a history of it, eventually we will find a tuberculous child or children which should be placed, if possible, under the most favorable environments to counteract the inroads of the disease.

I regret more has not been said in regard to the education of the laity as to the hygiene of tuberculosis by means of free lectures delivered in cities of this size (referring to Rockford) throughout the year by members of the medical profession. Such lectures have been delivered in the City of Chicago and elsewhere, on the hygiene of tuberculosis, and much good has been accomplished by them. The laity have been kept alert as to the dangers of this and other diseases, not necessarily creating phthisiophobiacs, which is a positive injury to the cause, but giving correct information regarding this widespread malady, and it is along these lines we must successfully combat this disease.

Dr. Babcock (closing the discussion on his part):—There are few problems in diagnosis confronting the general practitioner more difficult than the early recognition of pulmonary tuberculosis. He can not make use of the *x*-ray; perchance, he is loth to resort to tuberculin for various reasons, and he must rely, therefore, upon clinical observation. The fact that the diagnosis of early tuberculosis is difficult is recognized by everybody. It is, however, no excuse at all for ignorance on the part of the practitioner which makes him recognize pulmonary tuberculosis only when it has reached a moderately advanced stage, or perchance even has reached the stage of cavity formation. It fills one with mortification to hear men at health resorts say, as they do over and over, that they have cases sent to them as instances of incipient or early tuberculosis which already have cavity formation. The physician who wishes to diagnose a case of pulmonary tuberculosis when it is still latent, or when active symptoms are just beginning, and who must rely on clinical methods, must judiciously weigh the constitutional disturbance that is present in connection with the pulmonary signs, indefinite oftentimes as they are, and therefore the recognition of the disease is largely a matter of judgment. It may be unscientific to say that we sometimes see cases of pulmonary tuberculosis which we recognize as early, and yet we can not say absolutely just why we believe these cases to be tuberculous. I am sure I have seen cases in which I could not specify any one particular thing, which, by itself, would indicate them to be tuberculous, and yet the sequence of events has borne out the correctness of the diagnosis. The practitioner of medicine often depends upon the recognition of tubercle bacilli in the sputum in making a diagnosis of tuberculosis. That, of course, is conclusive evidence, but by the time the case has become one of open pulmonary tuberculosis, and tubercle bacilli are being discharged, the case has passed into a stage in which incipiency no longer exists. It may be still early in the evolution of the disease, but it is still passing from incipiency into a stage a little more advanced. The transition is slight.

The prognosis in a case depends upon the early recognition of the disease;

hence it behooves every one of us to study the cases not only with reference to the pulmonary findings, but as regards the constitutional effects in connection with these, and under the pulmonary findings I would especially emphasize slight deviation from normal in the breath sounds in localized areas, or perhaps a single localized focus at the apex posteriorly in the suprascapular region. I am perfectly certain many physicians overlook cases in the early stage because they confine their attention to the front of the chest of the patient, rather than to the posterior portion of it, and because they do not compare carefully small areas in the two apices.

Dr. Norbury (closing the discussion):—I have very little to add to what I have already said. I would have been pleased to have heard more discussion in regard to tuberculous meningitis and brain tumors. I would like to have heard an expression from others along this line, more particularly with reference to tuberculous meningitis. Usually the prognosis of tuberculous meningitis is gloomy, and yet occasionally patients recover, notwithstanding the fact that Osler and others say this disease is essentially fatal. The reason I say this is because some years ago two cases were reported by Dr. J. T. Eskridge of Denver. One of these cases was a patient in whom I was especially interested. The case was diagnosed as one of tuberculous meningitis by Dr. Eskridge. The late Dr. Parkhill saw the patient. This patient recovered after having been eleven months in bed, and is now well. This patient was an adult, which is a factor in prognosis, and leads me to say that in the adult it is possible under appropriate treatment to get an occasional recovery.

As to tuberculous tumors of the brain, we know that most all cases of this type are usually multiple, especially in children; now and then a recovery may take place in such instances, following an operation. We should keep in mind, however, the fact that we may find other tumors than the one which causes localizing symptoms. I had experience with one or two such cases where the post-mortem findings revealed that other tumors existed.

BLOOD PLATES AND THEIR CLINICAL SIGNIFICANCE.*

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Blood plates are the smallest formed elements of the blood. They are usually about one-third the diameter of the red corpuscles and appear as translucent, colorless bodies of varied shapes, according to the form they have assumed at the time they were fixed for examination. Many observers—Hayem,[1] Laker[2] and Kemp[3]—state that the plates are biconcave, resembling in this respect the red blood corpuscles. However, most observers are not in accord with this view.

The blood plates were discovered by Donne,[4] in 1842, but his work was practically forgotten. During the next thirty years they were found, from time to time, by different observers, but the methods employed were crude, and they were nearly always confused with other things. Zimmerman,[5] for instance, in 1846, probably included them, together with other things, in his *"Elementarkorperchen,"* and Max Schultze,[6] in 1865, cer-

*Paper read before the Champaign County Medical Society, February 14, 1907.

1. Hayem: Arch. de Physiol., 1878, p. 692-734.
2. Laker: Sitzungsber. der Kais. Akad., Wien, Abtheilung iii, vol. lxxxvi, p. 173-201.
3. Kemp: Studies from the Biol. Lab. Johns Hopkins University, 1886, vol. iii, p. 305.
4. Donné: Compt. Rend. de l'Acad. des Scien., 1842, vol. xiv, p. 366-368.
5. Zimmerman: Rust's Magazine f. d. gesammte Heilkunde, 1846-1848, vol. lxvi.
6. Max Schultze: Archiv. f. Mikroscopische Anatomie, 1865, vol. i, p. 1-43.

tainly had them under observation in his "granular masses," but none of the authors of this period even came approximately near a satisfactory description of the plates or a suggestive hypothesis as to their origin and function. Riess[7] (1872) was the first to study them with the idea of determining their possible clinical importance. His observations were very much lessened in value because of two peculiar properties of the plates which he failed to note and provide against; namely, their ease of disintegration and their marked tendency to stick to foreign bodies. A further criticism of his work, a criticism applying equally well to most of the observers who have followed him, is that too few observations have been made on any particular disease and too careless and incomplete records were made of the cases which are cited.

Ranvier,[8] in 1873, while studying the fibrin network in blood clot, described the nodes which we now know to be made generally by broken-down plates, and Vulpian,[9] at the same time, described more accurately how the plates formed these nodes. Osler,[10] in 1874, while studying the "granular masses" of Max Schultze, first found the plates within the blood capillaries in young rats. In 1877 Hayem[11] published his first preliminary papers on the blood plates. During the following two years, in addition to a number of scattered papers announcing the findings of his continued researches, he gave a more complete account of his work in a continued article which appeared in the *Journal de Physiologie*,[12] and from that time to the present he has made numerous and valuable contributions to the subject, his work covering nearly every phase of interest which the blood plates present. He clearly showed that they were connected with the coagulation of the blood, but he advanced, as his most prominent theory, that they were young red corpuscles. In fact, he called them hematoblasts, which pins this function to them by name. Hayems' hematoblast theory never met with general acceptance; it was attacked principally by Bizzozero,[13] whose work was first presented as a communication to the Royal Academy of Medicine at Turin in 1881 and published in a more extended form in *Virchow's Archiv.* the following year.[14] Bizzozero emphasized especially the part played by the plates in thrombosis and in coagulation. This work has been well substantiated. Bizzozero's views have constantly gained ground so that he is, if anything, better known than Hayem in connection with the subject.

The active part which the blood plates take in coagulation is due, in large degree, to the properties mentioned; namely, ease of disintegration and tendency to stick to foreign bodies. These characteristics, more than anything else, have made of little value the large amount of hard work which has been done by many enthusiastic workers with the plates. The

7. Riess: Archiv. f. Anat. u. Physiol., 1872, p. 237-248.
8. Ranvier: Gazette Med. de Paris, 1873, p. 93-94; Compt. Rend. des Seances de la Societé de Biologie, 1873, p. 46.
9. Vulpian: Gaz. Med. de Paris, 1873, p. 94.
10. Osler: Monthly Microscopical Journal, London, 1874, p. 141-148.
11. Hayem: Compt. Rend. de l'Acad. des. Sc.,. Paris, vol. lxxxiv, p. 1166-1169. 1239-1242.
12. Hayem: Archiv. de Physiol., 1878, p 692-734; Archiv. de Physiol., 1879, p. 201-261, 577-613.
13. Bizzozero, R.: Academia di Medicina di Torino, December, 1881, p. 124-128.
14. Bizzozero: Virchow's Archiv., 1882, vol. xc, pp. 261-332 (with plate).

ordinary methods employed in counting either the reds or whites are not applicable to the numeration of the plates, for the reasons mentioned. Of recent years a method discovered by Laker[15] and by Kemp,[16] independently and at the same time, does away with these sources of error. This requires the enumeration of the reds and whites by the ordinary method with the Thoma-Zeiss counting chamber and pipette. The ratio of the red corpuscles to the plates is then determined by drawing a drop of blood into a drop of fixing solution, taking care to put the fixing solution on the wound before any of the blood is allowed to exude. As the blood is drawn into the drop of fixing fluid it is stirred about thoroughly, and the mixture is then placed in an ordinary Thoma-Zeiss counting chamber, using a thin cover-glass, so as to admit as high an objective as possible. The ratio of reds to plates may then be determined. The fixing solution destroys the ability of the plates to adhere to foreign bodies or to break down.

The Thoma-Zeiss counting chamber is too deep to be ideal for determining this ratio. It is often desirable to examine a "suspicious" plate with a higher power than will work with the Thoma-Zeiss instrument. To obviate this difficulty Helber[17] has had a special chamber made the same as the Thoma-Zeiss, but shallower. In determining the ratio the counting chamber may be dispensed with altogether, and the blood, mixed with the fixture, may be examined under an ordinary cover-glass on an ordinary slide, using a ruled scale in the eye-piece or an Ehrlich ocular. This method gives reliable results, when carefully used, but it lacks the convenience of the ruled lines moving with the field.[18] Pratt[19] uses this in preference to any other. He cuts a small square hole in a disc of cardboard which he places in an ordinary eye-piece—thus making a simple and efficient instrument to replace the Ehrlich ocular.

The physiology of the blood plates is not yet fully determined. It is pretty well established, however, that they are of prime importance in the coagulation of the blood. Under the microscope, in thin layers of freshly drawn blood, the plates are seen to clump together, and if a stream of salt solution is allowed to flow under the coverslip and over them the excess of reds will be washed out and the plates, greatly distorted, will be seen, in clumps, adhering to the slide. By this short exposure to contact with the slide the plates have disintegrated and strands and lines of fibrin may be seen to radiate from the plate masses. Some observers maintain that fibrin ferment, an essential element in coagulation, has its origin from the blood plates.

That the blood plates are concerned in coagulation is being more and more believed by physiologists and pathologists. Repeating and extending the experiments of Bizzozero on the defibrination of blood, in which the blood was drawn from an artery, defibrinated and reinjected into a vein, Kemp and his students found, after the eighth to the tenth defibrination,

15. Laker: Sitz. d. Kais. Akad., Vienna, Part iii, May, 1886, p. 32.
16. Kemp: Studies from the Biol. Lab. Johns Hopkins Univ., May, 1886, vol. iii, p. 308.
17. Hilber: Deutsch. Arch. f. Klin. Med., 1904, vol. lxiii, p. 318.
18. See Kemp, Jour. Amer. Med. Assn., 1906, April 7-14.
19. Pratt: Jour. Med. Research, 1903, vol. x, p. 123.

that all the plates had disappeared. Contrary to the ideas of older investigators, the white corpuscles were not seen to break down and did not show any essential decrease in number. This evident relation of the plates to coagulation has led many to observe the blood of patients suffering with the blood dyscrasias, with especial attention to the blood plates. So manifest has this interest become that it is becoming more and more the rule to discuss cases of hemophilia, purpura hemorrhagica, severe secondary anemia or of pernicious anemia with more or less attention being given to the blood plates and their enumeration.

I was fortunate enough to be associated for a number of years with the investigation of the rôle of blood plates in coagulation which Kemp, of the University of Illinois, has been directing in his physiologic laboratory. I am indebted to him for allowing me to present these charts which show strikingly some of the more important results obtained.

The experiments may be grouped under two headings: those on animals in which the blood is observed before and after thorough defibrination and those observations made on healthy individuals passing quickly from a low to a high altitude.

In the first series of experiments a dog was anesthetized, his femoral artery and vein exposed and each fitted with a canula. Before the experiment careful counts of all the blood elements were made, and in most cases these counts were made for a day or two previous to the experiment. About one-fourth of the total blood was then drawn from the femoral artery, defibrinated by whipping with a wire defibrinator, filtered through muslin, and at the temperature of the body returned to the circulation by way of the femoral vein. After making another complete count of all the elements of the blood a second quantity of blood was drawn and reinjected as before. After each injection careful counts were made of the reds, whites and plates and careful observations were made with the microscope to determine the effect of whipping of the blood on each of these three elements.

Contrary to views quite generally held, it was found that the white corpuscles did not break down during coagulation and that they did not notably or regularly decrease in number. Never did they decrease enough to indicate that they broke down during the process of clotting. The plates, on the other hand, decreased with striking regularity with each defibrination until they finally practically disappeared. The dogs were allowed to recuperate, and for several days following the experiments counts were made to note changes which took place during regeneration. As the plates were most profoundly affected by the defibrination experiments, so they, in the period of regeneration, evinced the most lively activity in getting back to the normal. By a steady, constant rise the plates returned to their normal number in about seven days. These experiments, together with microscopic demonstrations of the disintegrating plates, following their exposure to contact with foreign bodies, show the close relation of the plates to coagulation.

Hayem has maintained for many years that blood plates are the forerunners of the red corpuscles and that plates may be found in normal

blood which may carry hemoglobin, and that in the regeneration of blood after hemorrhage such plates are more numerous. Experiments bearing on this point have been made by a number of other observers, and they are almost unanimous in pronouncing that the "blood plates are without color." In our experiments in the laboratory of the University of Illinois, our findings were in accord with those of the majority, but in our work, at a high altitude, we saw blood plates which were, beyond doubt, colored, and the color was like that of the red corpuscles—only paler.

To note the effect of altitude upon the blood and to observe the relation of the plates to the changes which altitude is known to produce upon the blood, Kemp went, with five graduate students, to the Rocky Mountains, in Colorado. For five weeks at Cripple Creek at an altitude of 9,400 feet above the sea level, and for eight days on Pike's Peak, at an altitude of 14,200 feet, careful daily study was made of the blood. Each one was expert in the particular observation to which he was assigned. Daily observations were made on each individual, and in blood from the same puncture was determined the specific gravity, the number of the reds, whites and plates, the volume of the formed elements of the blood, and the changes in the elements themselves which could be detected under the microscope. It is well known that the effect of altitude on the reds is to increase their number. What the effect of altitude would be on the plates was watched with a great deal of interest.

Before going to the mountains the number of blood plates (average of six individuals) was about 240,000 per cubic millimeter. On our arrival at Cripple Creek there was practically no change in the number of either the plates or the red corpuscles. On the second day the number of each began to rise, the increase in the number of plates being much more marked than in the reds. This increase continued fairly steadily for two weeks. The number then fell to a figure about two and one-half times greater than was observed before going to the mountains, and continued at this mark, for several days, until the party went to Pike's Peak, where there was a transient rise for two days, after which it fell to about the same point at which it had become steady at Cripple Creek. On the lowlands the ratio of the plates to the reds was one plate to twenty reds. On the mountains the ratio increased steadily to one plate to five reds at the end of two weeks. The remarkable effects of altitude on the plates of normal individuals is very striking. Kemp[20] suggests that this element may be of great value in indicating the good or ill effects of altitude on those patients whom we may send to the highlands for one or another of the blood diseases. That the plates are important indicators of the progress of the various anemias and other purely blood diseases and that they may be important factors in the cure of such has been suggested by several observers.

Hayem, who has been studying the blood with special reference to the plates and their bearing on the pathology of the purely blood disease, is very positive in his assertions that the plates are of great prognostic and diagnostic value in such conditions. While his methods are not above

20. Kemp: Amer. Jour. Physiol., 1904, February, vol. x, p. xxxiii.

criticism, his observations are remarkably constant. In his discussion of symptomatic anemia he says, regarding the plates,[21] "It is wrong to neglect these elements. When they are few in the anemias it is always a grave sign. When they become few in number the contractility of the clot is diminished. As you know, I have demonstrated experimentally the rôle played by the plates in the retraction of the clot. By depriving the blood of the horse, of the hematoblasts (plates), by filtration, there is no contraction of the clot and no exudate of serum from it. This double lesion of the blood, rarity of the plates and loss of contractility of the clot, is a sign of progressive pernicious anemia. In the severe anemias susceptible of cure, the number of plates does not become low enough to hinder the retractility of the clot and active treatment is not slow in making it rise."

Hayem found a form of purpura hemorrhagica in which the plates were absent, but in which a normal coagulation of the blood took place. In such cases, however, he found that there was no exudation of serum and no contraction of the clot. Hayem regards the plate count of importance, in the acute infectious diseases, in determining the prognosis. He says that, as a rule, unless there is a marked increase in the number of plates (hematoblastic crisis) at the time of the crisis in pneumonia or typhoid one should suspect a hidden complication. If, on the other hand, there is an increase of the plates at the crisis in the disease, the prognosis is good.

In the anemias, in purpura hemorrhagica, and in hemophilia there can be little doubt that the plates are of great diagnostic and prognostic value. That they are as important as the leucocyte in the consideration of the acute infectious diseases or in the chronic dyscrasias is not so well determined. Along this line much investigation may well be directed with good reason to expect valuable results.

21. Hayem: Lecons sur les Maladies du Sang, 1900, p. 328-330.

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AUGUST, 1907.

SHOULD THE TIME OF THE MEETING OF THE STATE MEDICAL SOCIETY BE CHANGED?

Quite a number of the members of the State Society have thought from time to time that it might be desirable to change the meetings of the Society from May until some date in the fall, September or October, and, in view of the fact that the American Medical Association meets in Chicago next June very close to the usual time of our State meeting, it appears that it might be well to consider this subject for the meeting of 1908. A number of the societies have changed from the spring to the fall; among them we will mention Ohio and Pennsylvania. The meeting of the New York State Medical Association occurs the first week in January at Albany, and it has also a fall meeting at the metropolis which, we believe, has proven to be a great success.

The meetings as now held conflict with the time of closing of the medical colleges and the members are usually about worn out from a hard winter's work. If the meetings were held in the fall, before the medical schools begin their sessions, the instructors could attend without sacrificing valuable time and all would be in better condition from the fact of their having had a summer vacation. Again, the third week in May is usually a time of disagreeable weather. Only exceptionally is there such weather as prevailed at Springfield in 1906, when the outdoor

functions were carried out according to program, while at Rockford and Rock Island the weather was so cold and rainy that these had to be dispensed with. In the fall the weather is usually settled and all these functions could be carried out without interruption. We should like very much to have expressions of opinion from our readers within the next sixty days on this matter.

ANNUAL MEETING OF THE CHICAGO MEDICAL SOCIETY.

The annual meeting of the Chicago Medical Society was held June 19, with the President, George W. Webster, in the chair. The transactions of this large and important body are so full of interest that we believe an abstract of the proceedings would be welcomed by all practitioners not only in the State of Illinois, but in the entire medical world, and we will, therefore, give a short synopsis of the reports of the different committees in the order in which they were read. Many of the topics now interesting physicians were touched on.

Dr. H. N. Moyer, of the Medicolegal Committee, made a report covering four years in Cook County and one year in the state, in which he said that the committee had considered 79 items, the word items being used advisedly because they could not be designated as suits. These items vary all the way from threats of malpractice to warmly contested suits in court. In four cases the committee had won after legal battles, and had disposed of eight cases definitely. A number of the remainder were dead and nine-tenths of them would not be heard of again. In four years the Cook County Legal Committee had compromised in only three instances, one of which, although a trivial one, was clearly a case of malpractice in which liability was certain. The others were closed up in an amicable manner.

Dr. F. R. Green, of the Organization Committee, reported 228 new members, making a total membership for July 1, 1907, 2,058. Great credit was given to the untiring efforts of the members of the committee and subcommittee. A new branch, No. 13, is being formed.

Dr. A. B. Keys reported favorably with reference to the establishment of a business bureau which has in charge the collection of accounts of physicians who are members of the Chicago Medical Society. We suppose there would be no objection should reputable physicians of other societies outside of Chicago make use of the bureau to collect from clients who have moved into the city.

Contract practice was discussed and the committee, of which Dr. C. D. Pence was chairman, concluded that the final solution of the entire question must come through a complete organization of the medical fraternity, and the more completely the fraternity is organized the more complete will be the final adjudication.

The Committee on the Abuse of Medical Charities find that in the City of Chicago there are at present 55 dispensaries, 16 of which are connected with hospitals, 9 with medical colleges, while 30 have no connection with such institutions. Only 25 are used for clinical instruc-

tion, 7 are privately owned. In 6 dispensaries medicine and treatment are furnished free, in 18 the charge is made to cover the cost of medicine, and in 23 as much money is collected from the applicant as can be obtained, the smallest fee recorded being 5 cents and the highest $10, which latter amount is charged by a maternity dispensary. Only 5 dispensaries exhibit signs announcing that treatment is limited to the sick poor, and that only those are cared for who are unable to pay outside physicians. Twenty-six dispensaries claim to investigate the ability of the applicant to pay. Investigation by the committee shows that in 51 of the 55 dispensaries the only investigation instituted consists of a few questions put by the physician in charge, the object of which the applicant at once discovers and answers accordingly. One dispensary refers the cases of doubtful applicants to the Chicago Bureau of Charities for investigation; 3 employ a nurse or a clerk to look up suspicious cases.

During the last year 29 dispensaries treated 223,110 persons. In 26, which were run in a slipshod manner, no records are kept of the number of patients treated. Sixteen dispensaries record the number of times each person returned for treatment. During the last year these 16 dispensaries treated 93,806 persons and treatment was given 246,140 times. The number of applicants refused was 1,170. In many cases, on investigation, the applicants for relief were found to be property owners, well-to-do citizens or persons drawing comfortable salaries.

The committee, on the evidence accumulated, finds that there is a constant abuse of medical charity; that 25 per cent. of the population are receiving free medical services, while only one-half of 1 per cent. of the population are receiving other forms of charity.

Dr. R. W. Holmes, chairman of the Committee on Criminal Abortion, made the following report:

The Committee on Criminal Abortion has succeeded in suppressing all objectionable advertisements in the daily press of Chicago. This has been of value to both the committee and the two public officials in aiding the prosecution of abortionists in the Criminal Court. Further advice has been given practitioners who have been called to women suffering from probable or certain effects of criminal procedures.

The first step was accomplished when *The Tribune* suppressed all advertisemnts of this nature, and one or two others consented to edit their notices. With comparatively little argument on the part of the committee, four other papers joined us by agreeing to refuse all advertisements of a criminal nature. You may appreciate what financial sacrifice this was when it was credibly stated that one of the papers lost $50,000 a year by so doing. Two papers announced they always had carefully supervised their advertising columns, and when we sent them clippings from their papers no comment was forthcoming on their part. The representatives of the two remaining papers heaped upon us the most vituperative insults and scoffed at us for endeavoring to purge their sheets of feticide advertisements.

As moral suasion had no effect, two other courses were open to us. One to go into the state courts and prosecute not only the advertisers,

but the publishers and proprietors of the newspapers; this would have been exceedingly difficult work and would have consumed an endless amount of time and money for the services of skilled attorneys—materials which were not at the command of the committee. To illustrate, in New York City, one case required the expenditure of over $600 to secure a conviction. As this plan was impracticable, another expedient was decided upon. A conference with a postoffice inspector was held. Finally an order was secured from Washington, approving the plan of our committee securing the proof of the relationship between the advertisement as it appeared in the paper and the advertisers' willingness to perform abortion; after this evidence, the postal authorities agreed to enter a "stop order." On recommendation of the council and committee, the trustees of our society appropriated $100 for the purpose. In the course of the next few weeks a detective appeared to each advertiser for the purpose of having abortion produced on herself or on a friend. With two exceptions all the parties visited either agreed to perform the necessary operation or to sell a medicine which would correct the female irregularity. When the sworn testimony was given the postal authorities, a "stop order" was issued. Finally, on April 21, 1907, this order was made permanent on an order of the Postmaster-general. This means that any paper which published notices after the order was entered would be refused the privilege of the mails; by this simple means, with an expenditure of $73, the publicity of the operators was denied them. From April 21 all the papers in Chicago have been free from advertisements suggestive of criminal operations. Now that the advertisements are removed, the work of the committee in the future will be to see that they are kept out; in the course of time they undoubtedly will appear in a new guise, for the abortionist's clearing house surely is planning to circumvent the order. We herewith append the list of parties affected by the permanent "stop order": Drs. McGrath, D. J. Dennis, Henry (R. Henry) top floor, Martha Walker and Dr. Martha Walker Remedy Company, Woman's Remedy Company, Mrs. Becker Bing, Faustman, Reb, Hagenow, Ida Von Schultz, Maichowitz, Private Hospital, Josephine Rafferty, Swith, White, Dr. Briney, Dr. Carpenter, North Side Dispensary, Private Medical Institute, Dr. Arnold. The Postmaster-general ruled that ten of these people and institutions were fictitious and, therefore, their mail was not to be delivered. One of the physicians paid a fine of $1,500 in the Federal courts, another was sent to the penitentiary for misusing the mails; another pleaded guilty of murder in the Criminal Court before the jury was impaneled, securing a lighter sentence than he most certainly would have received if he had stood trial and all the accumulated evidence of his nefarious career had been introduced. Three of the physicians and midwives are now under indictment and awaiting trial, one being held without bail on account of the revolting circumstances of the death caused by her.

We would impress the fact on all physicians that they must protect themselves from suspicion in their care of abortion cases by carrying on the treatment openly with consultants and wherever possible in a hospital.

A properly attested antemortem statement placing the guilt on the abortionist is an exceedingly valuable one in protecting the physician and lending efficient aid in a successful prosecution.

As the recent Clark decision of our own State Supreme Court declares all evidence which tends to show the reputation and business of an abortionist may be admitted as evidence in a trial, material accumulated by the committee already has been of advantage to the state's attorney in preparing for prosecutions; in the course of time this tabulated matter will be of increasing value in the trials in the Criminal Court. Finally, your committee stands ready to lend aid to all members of the society who desire information as to their line of procedure when required to attend abortion cases which present legal possibilities. A number of times in the past year physicians have sought advice from us which, we hope, has been of value to them.

The Secretary, in his report, states: It will be of some interest to the society to know that it does not require an effort to gain members to the society as it did formerly, as insurance companies and corporations require that a man should be a member of the organized profession before assigning him to positions of that kind. Also the advantage of protection afforded him by the Medical Defense Fund of the Illinois State Society aids materially in gaining new members to our Society.

Dr. H. N. Moyer was invited to take the chair while President Webster read his address, in which he said:

To be elected the President of the largest and best organized local medical society in the world is an honor of which any one may well feel proud. The general meetings have been held in the Public Library Building, which has been so generously placed at our disposal by the Public Library Board. The attendance was an average of 131. The *Bulletin* has grown in size, value and interest and has become an indispensable means of communication and of dissemination of useful information, and is well worthy of permanent preservation by the members of the Society, as it furnishes an accurate account of the work of the Society outside of the scientific papers. Its usefulness and value will both be augmented in the future. The Ethical Relations Committee, under the able leadership of Dr. W. H. Wilder, reports: "As to the work of the Ethical Relations Committee, it might be said that much of this work is in the nature of secret service, and it has been the policy of the committee, endorsed by the Council, to publish none of this work in the regular issues of the *Bulletin*, except that on which some definite action has been taken. This is to avoid the unpleasant notoriety that would result to any member from having published any complaints that were made against him. Much of the work of the committee, therefore, has been in investigating questions of misconduct, adjusting disagreements of members and generally in handling subjects that are not known outside of the committee. When it becomes necessary to take definite action on any given case, such subject comes before the Council and in some instances it is then published in the *Bulletin*.

It has been the endeavor of the committee to consider all of the deli-

cate subjects that come before it in the most careful, unbiased and unprejudiced way, with a sincere effort to avoid prejudging any case or doing anything that might be construed as an injustice.

This work is often of a very disagreeable nature, but it is of the utmost importance, and the committee has performed its arduous task fearlessly, justly and conscientiously, and the committee deserves the commendation and support of every right-minded member of the Society instead of what I consider has been unjust criticism for certain members of some of the branches. If all medical graduates had received a reasonable education in the principles of ethics and of medical ethics, there would be less work for the committee to do, the tasks would be less onerous, and the criticism more temperate.

The report of the Treasurer shows that there has been a substantial increase in the assets of the Society, the cash on hand being $10,755.91.

The following officers were elected for the year 1907: President, H. B. Favill; Secretary, Robert T. Gillmore; Councilors for three years, Adolph Gehrman, William L. Noble, George Bell, Frank X. Walls and William L. Baum; alternates, Heman Spalding, Charles E. Paddock, A. B. Keyes, W. S. Pickard and E. C. Riebel.

THE ATLANTIC CITY MEETING OF THE AMERICAN MEDICAL ASSOCIATION.

The 1907 meeting of the American Medical Association, held at the queen of Atlantic coast resorts, Atlantic City, while not so largely attended as the meeting held in Boston, was of unusual interest by reason of the important matters brought before the Association. A determined effort seems to have been made to make trouble by gentlemen representing the proprietary medical interests, the so-called independent journal interests and the usual quota of objectors found in every organization. But the verdict, as might have been expected, resulted in a complete vindication of the officers in charge of the Association for the past ten years, during which time it has shown such remarkable growth and has accomplished so many valuable reforms. One great objection urged against the officers of the Association was the publication of the American Medical Directory, but, as far as our experience goes, there has been no one thing undertaken by this organization which has been so universally applauded as this publication, unless it should be the exposure of the absurd claims of the proprietary medical interests. Both these movements were endorsed.

The subject of medical education was presented by the committee, of which Dr. A. D. Bevan, of Chicago, is the chairman, and was said to be one of the most interesting features of the meeting. A large proportion of the night medical schools (three out of four) were found by this committee to be in Chicago, and, as all were condemned, it stands to reason that a great deal of the reformatory work in medical education devolves upon the profession in this state. The Association endorsed the recommendations of this committee and it is probable that a foundation

was laid which will lead to practical results in the near future. Some of the startling statements made by this committee were:

Of the 160 schools, only about 50 per cent. are sufficiently well equipped to teach modern medicine. About 20 per cent. have no claims to recognition whatever.

Many of the poor schools are conducted as quiz classes for the purpose of preparing the student to pass the state examination, and not with the object of making him a competent practitioner.

Modern medicine requires a better order of intellect than that possessed by the average student entering its ranks to-day in this country.

In this country of great wealth and great population and of high average intelligence, we can no longer be satisfied with our present standards of medical education, nor should we be satisfied with any except the highest and best.

Medical schools need endowments in order to meet the demands of present-day medicine.

If the public realized the enormous difference that exists between well-trained, modern medical service and ignorant, inefficient medical service, they would soon demand and obtain the needed reforms.

A state without the protection of good medical laws, well enforced, becomes the dumping ground of the low-grade medical school, with its output of illy-prepared medical men.

The next meeting of the Association will be of especial interest to the practitioners of Illinois and the Mississippi Valley, as it is to be held in Chicago. By the time of the meeting there will be from 35,000 to 40,000 members and the circulation of *The Journal* will have reached the 60,000 mark. Already *The Journal* has become the largest and most widely circulated weekly in the world. The attendance at the next meeting should be a record breaker, and the membership of our State Society should be greatly increased by this meeting.

Scientific Editorial.

SYSTEMIC BLASTOMYCOSIS.

During recent years evidence has been gradually accumulating that the budding and branching fungus, the cause of blastomycetic dermatitis, is responsible for another disease generally unassociated with and independent of the skin affection. This addition to the repertory of the clinician has been named systemic or generalized blastomycosis or oidiomycosis. It is a subacute or more chronic pyemia, during the course of which subcutaneous abscesses develop chiefly upon the extremities, head and neck and less frequently on the trunk.

Curiously enough, most of the instances of this disease have been observed in Chicago or the contiguous territory, the first careful report by German investigators remaining unsubstantiated to any extent for a

number of years. Eight of the eleven cases reported since have concerned patients encountered in this region. J. J. MacKenzie, of Toronto, at the recent meeting of the Congress of Physicians and Surgeons in Washington, mentioned a case observed in Canada, and Coley[1] has recently reported the details of a case observed in New York, which, with the report by Gilchrist a number of years ago, make two cases for the country "east of the Alleghenies."

Still other patients with this disease have been seen by Chicago physicians, and postmortem examinations have been held upon some of them. Doubtless the details of some of these will be published soon, and among them the interesting, rather acute case shown recently in the clinics at the Cook County Hospital. Certainly Chicago would seem to be in a region where the disease is mildly endemic or the profession here have become better acquainted with the condition than in other localities.

In ten of the twelve patients mentioned in a publication devoted to this subject, the subcutaneous abscesses appeared first as swellings, many of which broke externally and formed indolent ulcers. An analysis of the conditions revealed by the postmortem examinations reported for seven of these patients clearly indicate that the disease, with possibly one exception, had its primary seat in the lungs and from there dissemination took place quite generally over the body, the visible external swellings and abscesses being naturally of greatest clinical interest. The pus contained in these abscesses, if obtained before rupture has occurred spontaneously, is found to possess the fungus in pure culture. The pus is generally somewhat chocolate-colored from the blood content. The fungi are readily detected in the unstained pus by their double contour and refractile edge; in fact, they are more easily found by examining the fresh pus than by attempting to stain them in cover-glass preparations, for with the usual staining methods they do not stain much.

Their presence in the sputum is also of no little clinical importance. In many of these patients the illness began with vague feelings of discomfort in the chest, a cough and later the expectoration of blood-tinged mucus. As a rule, however, the subcutaneous manifestations, due to early dissemination, have led to its recognition before the sputum was examined.

These fungi have been grown and proven pathogenic for various animals. They are found, as stated, in the abscesses unassociated with bacteria or other parasites, and histologically they abound in the various lesions. One of the interesting phases of the disease is the disposition the abscesses show to burrow and involve both bones and joints. The dissemination in the various internal organs of these fungi and the changes resulting in such locations have been found to be far in excess of what might be expected from the clinical symptoms, for the disease has been known to run a course of two and a half years, the earliest reported death being nine months; in other words, dissemination of the pus-producing organisms throughout the body does not cause death quickly. For a few patients there is reason to believe that the apparent

1. Jour. of Med. Research, 1907, xvi, 237.

recovery may be permanent. It is, indeed, a highly interesting period and a matter for self-congratulation that here in our midst a new clinical entity is now being born. In time it is not unlikely that examples of this disease will attract no more notice than one of its closely related processes, actinomycosis, now fairly common.

Correspondence.

RESOLUTIONS ADOPTED BY THE ILLINOIS STATE BOARD OF HEALTH AT THE MEETING HELD JUNE 18, 1907.

WHEREAS, Dr. Harold N. Moyer, of Chicago, in an address before a branch of the Chicago Medical Society on May 16, 1907, and in a newspaper interview, has expressed the "belief that the examinations before the State Board of Health were frequently crooked, and that money could be successfully employed by unqualified persons in securing a certificate" —this belief, according to Dr. Moyer, being based on facts brought to his notice over a year ago; and,

WHEREAS, Dr. Moyer has neglected to furnish these facts to the committee appointed by the State Medical Societies of Illinois, at a meeting held on April 5, 1907, to investigate into the examinations of the State Board of Health—at which meeting Dr. Moyer was present; and has refused to lay before the State Board of Health the source of his information or any other facts that he claims to possess, although formally requested to do so by the President and Secretary of the State Board of Health; and,

WHEREAS, By these statements Dr. Moyer has reflected indiscriminately upon the personal and official integrity of the members of the State Board of Health without affording them an opportunity to disprove his charges; therefore, be it

Resolved, That the State Board of Health hereby demands of Dr. Harold N. Moyer that he present his alleged information to the state's attorney of the county in which the "crookedness" is alleged to have occurred, for investigation by the grand jury, or to the Governor of the state for such action as he may deem proper; and be it further

Resolved, That copies of this resolution be sent to Dr. Moyer and to the Governor of the state, and also to the press and medical journals of the state.

[SEAL.]

To the communication from the Illinois State Board of Health Dr. Moyer has answered as follows:

CHICAGO, June 27, 1907.

JAMES A. EGAN, M.D.,

Secretary Illinois State Board of Health, Springfield, Ill.

My Dear Sir:—In reply to your favor of June 24, enclosing a copy of the resolutions adopted by the Illinois State Board of Health at the meeting held on June 18, 1907, I would say that I am gratified that the

Board has receded from its desire to investigate itself. The proper place for these matters to be taken up is the grand jury, which has power to send for persons and papers and to administer oaths. Within the last month the grand jury of Cook County has considered certain matters relative to the State Board, but so far no definite action has been taken. So far as I am concerned, you may be assured that every effort will be made to bring these matters before the proper official body.

Yours very truly,

H. N. Moyer.

COUNTY AND DISTRICT SOCIETIES

CLAY COUNTY.

The Clay County Medical Society met at Louisville, Tuesday, June 11, 1907, at 1 p. m. The following members were present: Drs. Fairchild, Gibson, Steely, Finch, Dillman and Duncan. Dr. Fairchild, the president, called the meeting to order. After the transaction of routine business the following officers were elected: President, Geo. W. Steely, Louisville; vice-president, John P. Shore, Sailor Springs; secretary, C. E. Duncan (re-elected), Flora; treasurer, N. W. Bowman (re-elected), Flora. Dr. Geo. W. Steely read a paper on Cholera Infantum. A general discussion of the subject followed, in which all the members present took part. C. E. DUNCAN, Secretary.

CHOLERA INFANTUM.

GEORGE W. STEELY, M.D.,
LOUISVILLE, ILL.

In selecting a subject for this occasion I did not choose cholera infantum with the least idea of giving anything new on the subject. But as the time is near when we shall have to encounter this disease, to a greater or less extent, I thought it would be well to bring the subject before the society.

The physician who is the most successful in the treatment of children is the one who will gain reputation in the neighborhood where he practices. Take a mother with a baby just old enough to be near and dear to her, at the jaws of death. The physician who comes to the rescue and saves the child is the one that family will call upon in similar trials with the older ones. If we desire that our practice should enlarge and expand, let us make baby doctors of ourselves, and success will be sure to follow.

In the consideration of this subject we shall not dwell largely upon the etiology and pathology, but shall confine ourselves to the symptomatology and treatment, since a familiarity with these two essentials is what the doctor needs when he meets a case of cholera infantum at the bedside, and more especially does he need the treatment, for this disease is ordinarily easy to diagnose, but often requires our utmost efforts in its management. This is one of the most common intestinal troubles which prevails with infants or children under three years of age, during the summer months, and often follows acute indigestion in which it frequently has its origin.

There are two important conditions that seem necessary in the production of this disease—temperature and diet. I have not yet been convinced that the origin of this disease is due to a specific micro-organism or milk infection alone, but do believe that many cases have their origin in a variety of germs that produce a chemic or toxic poison in the intestinal tubes and their mucous membrane. Their harmful effects are due to this chemic poison. They elaborate during the summer heat with improper diet, under antihygienic conditions, such as inhalation of noxious atmosphere, especially gases arising from animal and vegetable decomposition, or an atmosphere rendered impure by overcrowding with persons; or impure milk kept in unventilated places, and domiciliary uncleanliness. Any or all of these are often predisposing causes to the disease. I doubt if first dentition or teething ever enters into the cause, but do believe that many cases are greatly aggravated by its association with this disease. In many cases in artificially fed babies I believe the origin is due to an imported milk supply. Treatment is often unsatisfactory; when administered judiciously according to our latest methods, one of the most important essentials in the treatment is to see the case early and commence the treatment before the disease has too much the start of you. The course of this disease is very short, and unless we do commence treatment early our efforts will be in vain in the majority of cases.

The treatment may be divided into three divisions: Hygienic, dietetic, and medicinal. Pure fresh air is important in all diarrheal disorders in summer, and especially in this disease. The child should be kept perfectly quiet, preferably in bed, and should be kept cool. Bathing is soothing and beneficial as it produces cleanliness, and at the same time reduces temperature and nervousness. In the initial stage all food should be withheld and not a drop of milk of any kind should be administered, as digestion is arrested and all foods are bound to do harm. When the case is improving and the child desires food, as it rarely does, we should not allow it to have anything beyond a little fresh milk or barley water, ice water, albumen water, toast water, etc. Lime water is a good drink, but all water used should be thoroughly sterilized by boiling, and ice packed around it to cool same. No ice should be placed in the water. Nourishment and liquids should be given often and in small quantities, that they may not irritate the stomach.

The medicinal measures are many and in our selection we should first give those that will empty the alimentary canal the quickest, with the least possible reduction of the vital powers. No other treatment should be thought of until this is accomplished, unless it should be necessary to administer an anodyne or give a stimulant. The emptying of the canal of the offending substance is the only avenue through which we may expect good to come. This is what Nature is endeavoring to do by the incessant vomiting and purging that soon begin when the disease makes its appearance.

If seen early, before the stomach has become irritable, the emetic may prove beneficial, but I seldom ever give an emetic, as vomiting is free enough. The American text-book on diseases of children recommends the washing out of the stomach with warm water containing a teaspoonful of common salt to a pint. Then after this organ has been thoroughly cleansed, give from three to five grains of calomel. I have never yet, however, washed out the stomach of a child that had cholera infantum, but wash out colon with about same solution and starch, and then give calomel, dose according to age of child. The calomel is given for its anti-fermentative action and in order to reach the small intestines, which are inaccessible by the processes of irrigation.

After vomiting has been allayed by irrigation, stimulants may be given by the mouth. I prefer pure whisky or good brandy. If the child becomes thirsty I generally control it by adding four drops of dilute hydrochloric acid to two ounces of boiled cooled water, and give one-half to one teaspoonful every one to three hours as needed. And when the temperature is uncontrollable by sponging, use ice cap. If the stools should show the presence of blood, then I would recommend tannic acid solution, cool, and injected into rectum.

In our selection of anodynes we should choose those that are the least depressing upon the vital organs. We should also give such agents as will overcome the acute indigestion and prevent active putrefaction in the intestinal tube. Opium should be given very cautiously to young children.

To overcome the exhaustion that has been produced by the violent purging and vomiting, in extreme cases, we should give an intravenous injection of a normal salt solution into the cellular tissue of the buttock or thigh, for if given into the colon it is not likely to be retained. When we have symptoms of a relapse, we should administer stimulants, and none have served me better than pure whisky, strychnin, nitroglycerin, and in some cases they should be administered hypodermatically.

COOK COUNTY.

JOINT MEETING OF THE CHICAGO MEDICAL EXAMINERS' ASSOCIATION AND THE CHICAGO MEDICAL SOCIETY.

A joint meeting of these societies was held April 24, 1907, with Dr. J. A. Patton, President of the Chicago Medical Examiners' Association, in the Chair.

Dr. Bayard Holmes read a paper entitled "The Early Diagnosis of Diseases of the Liver and Bile Apparatus," which was discussed by Drs. Robert H. Babcock,

and Joseph M. Patton. Dr. Arthur R. Elliott read a paper entitled "Cardio-Vascular Degeneration—Signs, Symptoms and Results," which was discussed by Drs. Robert H. Babcock, George F. Suker, Joseph M. Patton, W. F. Coleman, and in closing by Dr. Elliott. Dr. F. Kreissl read a paper on "Chronic Affections of the Genito-Urinary Tract and Their Relation to Life Expectancy," which was discussed by Drs. William Cuthbertson and Arthur R. Elliott.

DISCUSSION ON THE PAPER OF DR. BAYARD HOLMES.

DR. ROBERT H. BABCOCK:—I was in hopes somebody would rise to make comment on this paper, which I regard as an admirable one. I would only like to emphasize one point to which the essayist alluded, and that is the use of auscultatory percussion and the use of the tuning fork. There are methods of diagnosis which are not extensively used, and which when used in many instances are open to error, as in the case with all methods of diagnosis; but nevertheless, if one has had any experience at all in attempting to outline the liver and gall-bladder and has used these methods, he must bear testimony to the fact that they form a valuable adjunct to the ordinary means of percussion and palpation.

I recall very distinctly a case seen by Dr. Holmes and myself in which the use of the tuning fork enabled us very accurately to determine the presence of an enlarged and distended gall bladder, and was borne out by the operation. The tuning fork is an ordinary tuning fork, and the principle is simply that if one auscultates by means of the ordinary stethoscope over a solid organ, for instance, and the tuning fork be set in vibration, then moved from point to point along the abdominal or chest wall, at first there is a distant note, but the intensity of the sound from the tuning fork becomes suddenly and strikingly augmented so soon as the tuning fork reaches the solid confines of the viscus. This one can reason out by considering the general conduction of vibration along the solid organ. In approaching the gall bladder from the lower abdominal zone, it is sometimes very striking indeed to notice the sudden augmentation in the intensity of the note when one reaches the liver or the gall bladder, especially if the latter be determined.

DR. JOSEPH M. PATTON:—I would like to mention a point in connection with examination of the liver which is often overlooked. That is a variation in the normal situation of the liver that occurs with modification in the physical condition of the right side of the chest. Examiners often fail to appreciate that the liver may materially change its position because of intrathoracic states which cause alteration in and modify the distensibility of the lung.

Not long ago I saw a patient in whom the posterior border of the liver was two and a half inches higher than normal, and the question of some intrahepatic alteration came up. The condition was due to interference with the action of the diaphragm, especially on the right side, because of the presence of a number of small stones in the gall bladder. The gall bladder was contracted. So when we have had conditions of the gall bladder, adhesions of the diaphragmatic pleura, or abscesses in the bottom of the lung, we may have considerable modification of the normal area of the liver. Unless these things are taken into consideration, we will often be led to think there is something wrong with the liver when, in fact, the organ is practically healthy.

DISCUSSION ON THE PAPER OF DR. ELLIOTT.

DR. ROBERT H. BABCOCK:—The paper to which we have just listened has touched so admirably upon the various points considered, that although very suggestive as a text for possible discussion, it really leaves very little for one to say without running the risk of repetition. Nevertheless, I would like to emphasize, by expressing in a somewhat different manner, the points made by the essayist, namely, that from the standpoint of the clinician we must recognize two great and really distinct types of cardio-vascular degeneration, the one with normal or but slightly increased blood pressure; the other with abnormal, or markedly heightened blood pressure.

The first group generally comprises those individuals who are spare, more or

less, in whom the vascular degeneration is widespread, and seems to involve the peripheral vessels equally with, if not more than, those of the interior of the body. The arteries may feel hard, pipestem like, nodular, but in some instances the vessels feel comparatively soft to the finger, and the physician who would depend upon palpation of the peripheral vessels for his recognition of the degenerative change going on might be misled by this fact. The recognition of these cases is made by a careful study of the symptomatology and investigation of the vessels of the eye and a study of the heart. In some of these cases there is quite a manifest hypertrophy of the left ventricle. In other cases, however, the heart is not very manifestly enlarged. In fact, on ordinary observation the organ might seem not hypertrophied, and, indeed, occasionally the heart seems to the physician rather smaller than larger. The tones are often clear; but there may be a faint systolic murmur at the apex accompanying the first sound, limited to the apex, and very often there is a systolic murmur in the aortic area, with a sharply accented, though not clanging, aortic second tone. In these cases the sphygmomanometer may register practically a normal blood pressure, or one which borders on the upper limit of normal reading, perhaps 135. I have the case of a man now in which the reading is 134.

The other class of cases are those in which the cardio-vascular degeneration is not very apparent, perhaps, but there is a persistently high blood pressure. The accessible vessels are thick and roll under the fingers: they are fibrous and leathery, and the heart is generally enlarged in all its diameter. If there are no murmurs present, there is apt to be a clanging aortic second tone, and there may or may not be a systolic murmur in the aortic area. In some of these cases careful percussion will enable one actually to determine some dullness over the arch of the aorta at either side of the manubrium sterni, showing some dilatation of the aorta; and the aortic second tone is especially marked.

There are a great many systomatic differences in these cases, but the question arises: What constitutes in reality the symptomatic differences in these two groups? It seems to me the differences can be referred to the blood pressure. I will not attempt to comment upon the etiology of these cases. There probably is a very distinct etiological factor in each class, but the symptomatic differences seem to me to be referred largely or entirely to the differences in blood pressure. In the one case the individual is well, so long as his blood pressure is high, although not dangerously high for him. When, however, the resistance which the heart has to overcome reaches an extreme degree, the patient begins to manifest symptoms of distress, and these symptoms are, in most part, of cardiac inadequacy, although in other cases they may be cerebral. In the first group, the safety of the individual and the very lack of pronounced symptoms seem to me to be explained by the fact that the blood pressure is not abnormally high. He is not capable perhaps of as much vigor as formerly, and yet it is quite remarkable how active such an individual may be. He bears illnesses, especially infections, as Dr. Elliott has said, badly, on account of the enfeeblement of circulation and the destructive changes which have taken place in the various organs in consequence of the sclerotic process.

One is a man of 52 years of age, with a blood pressure of 208. At present is less vigorous than usual, his blood pressure has fallen, and it is by restoration of the blood pressure to something like a normal condition that his vigor increases, just as with the other class of cases the improvement in symptoms and the prevention of danger depend upon a decrease in blood pressure, a diminution in blood pressure, or, at all events, maintenance of the blood pressure in *statu quo* at a point something more like what might be called normal to the individual. If not trespassing too long upon your patience, I have in mind two cases I have seen within the last two days. They illustrate these two types beautifully.

One is a man of 52 years of age, with a blood pressure of 208. At present there are no symptoms, but from an examination of the heart, of the urine, and of the vessels, it is apparent that the man is developing cardio-vascular degen-

eration, which, before many years, will reach a degree that will cause him serious embarrassment.

The other individual is a man of 61, spare in build, with not very stiff vessels, yet they are recognized as somewhat sclerotic, and who has the cardiac findings I have spoken of. The area of dulness does not exceed the normal, the apex beat being a gentle tap in the normal position. There is a feeble systolic murmur, with the first tone at the apex, and the second aortic tone is accented. There is also an aortic systolic murmur, and the blood pressure is 112. When he came to me a few months ago complaining much of debility, his blood pressure was something under 100, but under treatment it has risen now to what may be called normal for him, and with that his whole energy has come back and he declares that he is as young as he ever was.

Dr. George F. Suker:—It is gratifying to note that Dr. Elliott has given more than passing notice to the value of the ophthalmoscope as an aid in making an early diagnosis in so-called arteriosclerosis. It is particularly in this vascular lesion that the general practitioner can derive many a valuable point—both prognostic and diagnostic—when it comes to determining early manifestations of arteriosclerosis. The eye, being one of the few terminal organs, supplied with end arteries, offers the only direct means for the inspection of any changes that may ensue in both arteries and veins. Arteriosclerosis is peculiar in so far that it very frequently affects the terminal vessels long before the larger ones are involved; it is for this reason that such organs as the heart, kidney, brain and eye give the first evident lesions of arteriosclerosis. It is not uncommon to find marked changes in the vessels of the fundus oculi long before corresponding changes are noted elsewhere. Not only is the caliber of the vessels changed, but frequently small hemorrhages into the various ocular coats ensue, and because of the interference in the nutrition the lens, chorioid, the retina and optic nerve are prone to suffer, thus always resulting in loss of visual acuity.

The width of the blood current corresponds to the width of the vessel, because of the thinness of the latter. Therefore, any increase in thickness will change the appearance of the width of the blood column. And because of this sclerotic process which invariably implicates the tunica intima and media, the underlying vein is often compressed, thus you will have a dilatation at the proximal side and an attenuation on the distal. Very frequently ampulliform dilatations are noted in the veins. Quite often the arteries have an appearance not unlike that of miliary aneurysms, because of the irregular sclerotic process. That is to say, this process is not uniform throughout the entire length of artery or vein, but may be limited to certain portions only; and this is particularly true of the vessels supplying not only the fundus oculi, but also of the extra-ocular vessels.

As far as the diagnostic value or prognostic import is concerned, the pinpoint hemorrhages in the retina accompanying an arteriosclerotic process, are not as pertinent as those seen in the conjunctiva. No real cause has ever been assigned why this should be so, and yet it is a clinical fact that patients suffering from recurrent conjunctival hemorrhages are more apt to have cerebral hemorrhages than those who simply have small pinpoint retinal hemorrhages. In this connection it may not be amiss to state that unless the retinal hemorrhages are directly in the macular area, no interference in visual acuity obtains.

In the beginning of an arteriosclerotic process, the conjunctival vessels may frequently be made to assume a beaded appearance by instilling one or two drops of an adrenalin solution. This will more markedly contract the portions of the vessel walls which are free from the sclerotic process, and therefore will give you this beaded appearance. It is not pathognomonic, but certainly very suggestive of angiosclerosis.

In cerebral arteriosclerosis an examination of the fundus vessel is very important in so far that it will show to what extent the process has advanced. In these cases there will always be a retinal pulsation, and by asking the patient to bend the head well upon the chest and examining the fundus the pulsations

are markedly increased. In addition, the arterial tension of the temporal vessels with the head in the flexed position is higher than when the latter is erect.

As the majority of patients suffering from an incipient senile cataract first consult their family physician, it would be wise on his part to make a thorough investigation of the arterio-vascular system, for the largest percentage of incipient senile cataract is due to a beginning arteriosclerosis. Many of these cataracts can be prevented from maturing by the proper treatment of this arteriosclerotic process. For, it is well known, that if early recognized and well taken in hand, the results are very encouraging. When, however, the arteriosclerotic process has once been fairly firmly established, little can be achieved other than holding the progress in check. It is for this reason that an early diagnosis is so important, and therefore any means which can render any definite or positive data is to be welcomed rather than spurned.

Dr. Joseph M. Patton:—The paper of Dr. Elliott illustrates very nicely the point at which we have arrived in the history of these degenerations of the vascular system. Beginning with Bright, who ascribed them to diseases of the kidney and was the first one to describe the kidney changes occurring in this association, we then have the theory of Traube as to the effect of cardiac hypertrophy in causing irritation of the vessels and producing vascular changes. Then we have the theory of Gall and Sutton, or the effect of arterio-capillary fibrosis in causing the heart and kidney changes and later the theory of Ewald that these changes were due to hypertrophy of the muscular tissue of the media of the vessels. Still later we reached a period when we recognized the effects of toxemia of various kinds, inducing the various degenerations, as illustrated by the paper to-night.

We may go, perhaps, one step further, and agree with Huchard that we have a presclerotic stage of these diseases, which, although it has no demonstrable pathology, yet is an actual beginning of this process and constitutes a very curable stage. These diseases or degenerations are undoubtedly due to the effect of toxins, and to irritation of the vascular channels, and according to this authority , if we can recognize the presclerotic stage, we can cure these patients by proper hygiene and proper diet, also by the use of vaso-dilators temporarily, etc. When we reach the stage of demonstrable pathology, which has given rise to actual clinical symptoms, we probably have reached a stage which is not curable, and can only be relieved.

I think too definite conclusions are likely to be drawn from the blood pressure in this disease as to the exact nature of the case. We are beginning to realize, as you have heard, that there are different types of cases in which we have a high and a low blood pressure; but to draw definite prognostic conclusions from the blood pressure, unless the observations are carried over a long period of time, is apt to lead one to false conclusions. The cases which terminate by sudden death from apoplexy, and such results, are usually not the ones that give us definite indications of peripheral changes in the vessels. They are probably cases with a local nodular endarteritis, and its resultant changes in all coats of the vessel, which is not manifested by external evidence in the peripheral arteries, or by continuous maintained conditions of blood pressure. After all, putting aside those cases of more or less localized degeneration of the blood vessels, the question comes up as to the condition of the heart muscle and its relation to the general blood pressure and circulation. In some cases, as has been said, we have enlarged hearts, and in other instances we have hearts of moderate size. We have a patient who will give us a well-marked systolic murmur at the base, and a small heart. Another patient who will exhibit perhaps a murmur, or may be no murmur, and a large heart. In the former, the murmur has really nothing to do with the case, except that it is an indication of involvement, more or less, of the first portion of the arch of the aorta. It does not necessarily indicate stenosis, but may be indicative of disease in the beginning of the arch of the aorta.

What effect does the condition in the wall of that portion of the arch, from

which the nutrient vessels of the heart spring, have on the myocardial circulation? We may have a large heart with or without a murmur, the size of the heart being due to the peripheral resistance more than anything else. The first portion of the arch of the aorta may not be involved, and unless we have actual disease in some portion of the coronary artery, we may have a good circulation, and although the heart may be large, the prognosis may be relatively very good; so that, after all, it reverts to the relation of the heart to the general circulation and the condition of nutrition of the heart muscle. And those things can only be balanced in our estimation by a continued study of the factors in the case, and the condition of the heart muscle in its relation to the blood pressure. The blood pressure must be observed over long periods of time; it is necessary to have a number of different observations made under various conditions before we are justified in coming to a definite conclusion as to the effect which blood pressure is going to have on the future of the case.

DR. W. F. COLEMAN:—The essayist asked me to be here to make some remarks on his paper. I came more to learn than to talk, and I must say that from such a classical description of vascular degeneration, I have learned much.

Some ancient history might not be uninteresting to the members present. In 1869, I studied under three remarkable men, Hutchinson, Hughlings Jackson, and Sutton in the London hospital. At that time Sutton had announced that Bright's disease was due to arteriosclerosis.

To emphasize what Dr Suker has said with regard to the usefulness of the ophthalmoscope in diseases of the eye. I would mention that Hughlings Jackson studied the head of the optic nerve with the ophthalmoscope, and it was he I believe, who first recognized the fact that a brain tumor causes a triad of symptoms—vomiting, headache, and *choked disc*, and the most important is choked disc. This is so important because many a patient who has marked choked disc has good vision, and therefore does not consult an oculist. On the other hand, the general practitioner, the surgeon, or neurologist did not know how to use the ophthalmoscope and did not recognize the most important sign in brain tumor, so the patient fell between two stools. (Hutchinson then tentatively anounced that tobacco and alcohol cause toxic amblyopia.)

It is hardly necessary for me to point out the necessity of the general practitioner using the ophthalmoscope for diagnostic purposes in cases of cardio-vascular degeneration, Bright's disease and brain tumor. I shall confine my remarks largely to the changes in the eye due to arteriosclerosis in Bright's disease. I recall a few cases in which a diagnosis of Bright's disease or interstitial nephritis had not been made, the patients having been under the charge of a number of physicians, without there being apparently a trace of albumin or casts in the urine. The renal specialist well knows that certain cases of nephritis may present themselves without those signs. In 1875 a man came to me saying that his sight was failing. On examination I found the characteristic starlike white circle around the macula, as in Bright's disease. He had albumin in his urine. He had an hypertrophy of the left ventricle. There was also some valvular lesion.

This condition of the eye offers a prognosis generally as to longevity, of less than two years, although a few patients may live for ten or fifteen. I told him that he had Bright's disease, and he said. "That is impossible." He had been examined six weeks previously, and had passed an examination for insurance. I said, notwithstanding, every man ought to make his will and be prepared for the future. If he does not die, it will do no harm. Well, that man died in three months. The head examiner of the life insurance company wrote and asked what I had found. I replied "That is my affair, and that of the patient's family." I was not his medical examiner. The appearances of degeneration in the eye which accompany Bright's disease are generally characteristic, though they may be due to other conditions, such as syphilis, diabetes, and other various toxic causes. We can not be certain of the diagnosis, but if we find pathological changes in the eye and consider the general symptoms, we are not apt to be

mistaken, and in making a prognosis of a short lifetime, I do not remember to have been mistaken. The condition is most apt to be binocular, although it may be monocular, and it is almost invariably found in the retina. The nerve head suffers later. In one case, recently seen, there was simply a monocular optic neuritis, and by exclusion. I made a diagnosis of Bright's disease which the essayist corroborated, and that patient died within six months. The slight hemorrhages in the eye accompanying Bright's disease are very important; but hemorrhages dependent on other causes are more important as to the prognosis of cerebral hemorrhage. In every case of hemorrhage or ecchymosis of the conjunctiva, we should examine the patient carefully for albumin in the urine, and as to other general symptoms, because that person, having a hemorrhage without any particular cause, apparently, may have a serious lesion.

DR. ELLIOTT (closing the discussion):—With reference to the matter of prognosis, which has been referred to by Dr. Babcock and Dr. Patton, and also by Dr. Coleman, I wish to say that in no branch of medicine is the science of prognostics such an uncertain quantity as in cardio-vascular diseases. Prognostics is a most difficult branch of the science of medicine at all times, and it is impossible in cardio-vascular degenerations to draw definite conclusions in forecasting the future of a given case. What is said in the way of broad generalization must be discounted, because it can not be applied definitely to any single case. I think one needs to have much experience in the observation of these cases to foretell what will happen to any individual. But the element of blood pressure it seems to me, notwithstanding Dr. Patton's exception, is the most important prognostic element in cases of vascular degeneration. Many of these individuals with arteriosclerosis live to a good old age, even with high blood pressure, and I have some under observation. A fact which constitutes a very bad element in the insurance of such lives is that if they should be overtaken by intercurrent affections, they do not have a good chance of recovery. They have a bad cardiac structure to carry them through an infection, and the cases which have this cardio-vascular degeneration quite marked, are liable to slip up any moment; they have an insecure tenure of life, and the man who is apparently well to-day may be in his coffin to-morrow as a result of apoplexy, heart failure or of developing uremia. I have seen uremia come on in a night without any warning. Apoplexy, too, is exceedingly common. If a man does not succumb with his first attack of apoplexy, he may live for years. I have one such patient who had his first stroke of apoplexy three years ago, and he never had a blood pressure less than 185. In forecasting the future of any of these individuals, we should bear in mind that these broad generalizations are gathered from accumulated experience.

CHRONIC AFFECTIONS OF THE GENITOURINARY TRACT AND THEIR RELATION TO LIFE EXPECTANCY.*

F. KREISSL, M.D.

It is impossible for a paper, the title of which covers such a broad subject, to be complete when presented on this occasion, therefore I attempted only to submit a few important features which might be of interest from the standpoint of the medical examiner. It is also evident that acute conditions are eliminated, since these as a rule do not present themselves to him. Neither did I consider chronic conditions, the symptoms of which are so pronounced as to be immediately recognized without any difficulty.

Your attention is chiefly invited to a few lesions, their complications and sequelæ, of whose existence perhaps the person to be examined is not aware, whose recognition, however, by the examining physician is of paramount importance. Such conditions are sometimes readily discovered in the customary examination, at other times they require the whole array of diagnostic means, and then again with all these they might only be suspected. Some of them are congenital defects,

* Read before joint meeting of Chicago Medical Socety and Chicago Medical Examiners Association, April 24, 1907.

some acquired, some originate in the urogenital tract, others have their seat without and produce local symptoms therein. A few are of a trivial nature; the others represent serious lesions.

Well-known are the dangers associated with an undescended testicle. They may arise from incarceration or from suppuration following a trauma or a gonorrhea, and subsequently terminate in a fatal peritonitis. The tendency to malignancy, carcinoma or sarcoma, peculiar to ectopic testicles, is also recognized. The same tendency is attached to an originally benign lipoma, fibroma or cyst of the spermatic cord and of the tunica vaginalis.

Congenital diverticulæ of the bladder are quite rare. I have seen only two. They are harmless unless an infection occurs, in which event they become a formidable menace due to the local, almost incurable suppuration, consequent stone formation, and renal infection. The presence of a congenital diverticulum may be anticipated if, excluding other palpable reasons, comparatively large quantities of urine are voided in two stages with a few minutes intervals. The cystoscope of course would furnish unmistakable proof.

Prolapse of the kidney is often looked upon as an unimportant condition and treated with indifference, yet it has been shown conclusively that renal dislocation is followed by prolonged pelvic congestion with its long chain of disturbances in the gastrointestinal tract, the nervous system and the genitourinary organs. It also produces irreparable structural changes, chiefly hydronephrosis, cystonephrosis and cystopyonephrosis. While not necessarily fatal, kidney prolapse is a serious condition because of the possibility of adhesions with the liver, gall-bladder, transverse colon and the displacement of the duodenum and stomach.

Chronic gonorrheal urethritis may exist for years without perceptible inconvenience, even without a noticeable discharge, the only evidence of the latter being a few shreds in the urine. Sometimes there are no shreds at all, the urine presenting a gross normal appearance, until upon some provocation or following a massage of the urethra, prostrate and seminal vesicles, more or less abnormal material reappears. And yet we all know the dangers associated with such a latent process. We know the frequency of gonorrheal infection of the system, of the renal pelvis and of the kidney proper. Fortunately we possess a pretty reliable procedure to cure the gonorrheal infection, which consists in curing the gonorrheal focus. But those familiar with the subject know only too well that it is almost impossible to dislodge the gonococcus after it is firmly entrenched in a seminal vesicle, wherefrom infection of the genitourinary tract occurs again and again, gradually producing the whole circle of neurasthenia and carrying in its trail a low vitality and resisting power.

Pyelitis, if recognized early and if its cause can be permanently removed, is not a very grave disorder, but the symptoms are sometimes so obscure as to prevent an early diagnosis before the kidney parenchyma has become seriously deranged. I have seen cases in which the urine from the bladder was macroscopically clear, showing under the microscope but few pus cells. I have found the same condition in the urine collected from the ureter, until upon entering the renal pelvis pus loaded urine commenced to flow from the ureter catheter. The expectations entertained for the efficiency of pelveo-renal lavage in pyelitis have not altogether materialized, and I considered some of the radiant reports on this subject as fanciful exaggerations. After having tried this method for several years in many cases and in the various stages, I have been forced to the conclusion that the field of its usefulness is a rather limited one for several reasons.

First.—The majority of the cases of infection of the renal pelvis are of a hemotogenous or metastatic character, consequently we deal with a pyelonephritis and not with a pyelitis. The process commences in the kidney parenchyma whence it infects the renal pelvis.

Second.—The ascending renal infection is much rarer than the descending one. It spreads rapidly from the pelvis into the parenchyma, and therefore little can be expected from a local application to the pelvis.

Third.—The underlying causes of the trouble are mostly such as to demand surgical intervention, for instance, stone, stricture, tuberculosis, etc.

Another condition, perhaps not always recognized by the medical examiner, is urethral stricture, a percentage of which is responsible for serious and sometimes irreparable lesions in the urinary tract. I only remind you of the concentric hypertrophy of the bladder, the dilation of the ureters, and the renal pelvis, and of the atrophy and degeneration of the renal parenchyma caused by the backing up of urine. While the majority of ureteral coarctations is due to a preceding gonorrheal infection, there is a fair percentage of traumatic and congenital strictures, and it is especially the last named variety of which the owner might not be aware at the time he is applying for life insurance, and which, on account of the absence of visible signs in the urine so common to other strictures, will not be suspected by the examining physician.

Sometimes ulcerations of the bladder wall will for a while at least give the patient none, or so little trouble, as to remain unnoticed, and the urine may at the time have a normal macroscopic appearance. Periods of exacerbations with a cloudy or bloody urine alternate with remissions. However, a careful microscopic study of the sediment will always show a small amount of pus and blood cells and tissue shreds in the apparently clear urine. Some of the ulcers readily respond to the proper treatment, others require more or less radical surgical measures not quite free from danger and occasionally followed by extensive cicatrization and loss of contractile surface. Others, like the perforating ulcer or those having a tendency to malignancy, constitute a real menace to life.

That vesical and renal calculi, uric acid and lime stones, may occasionally grow to quite formidable proportions without distinct subjective symptoms or affecting the gross appearance of the urine is a frequent experience with every surgeon. The same is observed in vesical tumors, but the urine sediment contains almost invariably the evidence of a pathologic condition in these cases. I say almost invariably, because occasionally, dependent on circumstances, even the sediment, especially in renal calculus, appears to be normal.

Vesical calculi, if recognized and properly disposed of, are not a very serious or dangerous ailment, neither are renal calculi, but for the constitutional tendency and local condition in the kidney which favor the recurrence of the trouble, invite infection from without and menace the integrity of the organ.

That malignant tumor in the bladder or the kidney with very few exceptions shortens the life is perfectly clear. About the benign tumors the opinions are divided. It is true that some of them have been observed for many years in the bladder of patients who appeared to be perfectly healthy otherwise, others having been successfully removed have not recurred. Others have recurred several times, and again others have changed into malignant growths. From all that we know, or rather from what little we know about these tumors, I would consider every one of them a serious disorder.

Tuberculosis in the genitourinary tract may remain quiescent for years, yet nobody denies that next to malignant tumors, tuberculosis means a very grave disease. The unaccountable appearance of a purulent urine, the failure of the usual therapeutic measures, the absence of pyogenic germs, or the persistent acidity of a purulent urine in the presence of urea decomposing bacteria, will arouse the suspicions of the attending physician. A staining for tubercle bacilli or an inoculation test will clear the situation. But the medical examiner as a rule encounters tuberculosis of the urinary tract when the urine is clear and the patient of a healthy, robust appearance, and he is then not in a position to suspect the condition unless a nodulation in the epididymis or the spermatic cord is incidentally palpated.

Another grave condition easily overlooked is the paresis and paralysis of the bladder of spinal or cerebral origin. Dysuria, urine-retention and incontinence are very often the initial manifestation of locomotor ataxia at a time when a close examination might demonstrate but slight evidence of Romberg's symptom, the knee jerk and pupil rigidity. This nervous dysuria—the difficulty of empty-

ing the bladder in the absence of an anatomical obstruction—can be caused by sphincter spasm, by paresis or paralysis of the detrusor. Sometimes both conditions appear combined. Symptoms of dysuria are also observed in inflammatory affections of the urinary tract in certain diseases of the rectum and after operations therein, but these as a rule do not present themselves to the medical examiner.

The incontinence of the neurasthenic is not a true incontinence. It is a postmictural dribbling because of the absence of what the French surgeons call so expressively "A coup de piston," the forcible expulsion of the last drops of urine commonly observed in normal men. The neurasthenic individual with symptoms of spasms contracts the muscles of the perineum and the root of the penis during the whole act of micturition, whereby the power for the final "coup de piston" gets lost. A man with the evidence of paretic or paralytic incontinence always calls the abdominal muscles into action, sometimes to the extent of crouching or sitting down, leaning forward and even assisting with his hands pressing on the abdomen in order to mechanically empty the bladder.

It also should be borne in mind that neurasthenic or nervous individuals sometimes are not able to urinate in the presence of others, or at least do not completely empty the bladder, but if barring all these causes, a person with a full bladder finds difficulty to start the flow of urine even if left alone in a room, if after urination the bladder upon palpation still appears more or less filled, if the person, upon inquiring how often he urinates, answers that he feels the desire but once or twice in twenty-four hours, it becomes imperative to look for further symptoms of a spinal or cerebral lesion.

That cloudiness of the urine, the presence of albumen or blood do not always indicate serious or life menacing symptoms is well known. Phosphaturia, for instance, may be nothing worse than the expression of a secretory neurosis, while on the other hand it may denote a serious essential disorder somewhere. Here I remind you only of the phosphaturia as a symptom preceding or alternating with diabetes.

The views regarding the clinical importance of bacteriuria are still divided. Yet we can readily see how the presence of even non-pathogenic germs in the bladder or kidney may produce abnormal fermentation and favor the formation of concretions, and in this sense it can not be considered an insignificant disorder. Of the colon bacillus we know that it is capable of producing cystitis and pyelitis, although it is sometimes found in large numbers in a pus free urine without a sign or symptomatic indication of cystitis or infective nephritis. For more detailed information on this subject I refer to Croftan's Clinical Urinology and A. R. Elliott's short but instructive paper, both of whom I have quoted herein.

Hematuria and hemoglobinuria are justly looked upon as evidence of serious derangements, yet sometimes it might indicate nothing more than a cold, a preceding slight blow or a symptom of malaria. I have seen several cases of true unilateral malaria hematuria which promptly yielded to the administrations of quinin. Of more than ordinary interest is this true unilateral hematuria in malaria. The more common form in malaria is hemoglobinuria and it is generally accepted to be bilateral. In each case mentioned above I was able to demonstrate by ureter catheterization clear urine from one kidney and bloody urine containing numerous red cells from the other.

A similar significance attaches to the presence of albumen in the urine of patients attacked with chronic prostatitis or seminal vesiculitis. The diseased prostrate, like the diseased kidney, secretes albumen and this secretion might escape through the deep urethra into the bladder and be mistaken for that of renal origin. The presence of albumen in the urine in spermatorrhea has also been thoroughly and satisfactorily discussed in a paper of Dr. Elliott to which I refer you.

In reviewing these rather limited remarks it must be admitted that the task of the medical examiner in diagnosing certain urinary lesions and determining

their degree of severity is a very difficult one. He is at a decided disadvantage compared with the general practitioner and the genitourinary specialist because he is not in a position to employ all the known diagnostic means and the exploratory instruments in daily use by the latter. Yet I think that there is opportunity for him to widen his diagnostic limitations.

First, by a careful inspection and palpation of the body and the external parts of it to which this paper refers.

Second, by watching the character, size, shape and force of the stream of urine passed in his presence.

Third, by attaching more weight than is customary to the microscopy of the urine. That by the presence, number and form of epithelia and connective tissue shreds in conjunction with all the other features in the case, different pathologic conditions can be diagnosed, such as ulceration, suppuration, trauma, tumors, cirrhosis of the kidney, atrophy of the kidney and severe local inflammation, has been quite extensively demonstrated by Heinzman in his book on Urinalysis and Diagnosis.

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DISCUSSION ON THE PAPER OF DR. KREISSL.

DR. WILLIAM CUTHBERTSON:—Dr. Kreissl in his paper gave us several pertinent hints in regard to the genito-urinary apparatus. Fortunately for the life insurance companies, the diseases which he has enumerated do not give serious trouble or prove fatal until the later years of life. In making a diagnosis in these cases of chronic affections of the genito-urinary tract, if we ask the applicant for insurance whether he has ever had venereal disease, nine hundred and ninety-nine out of a thousand will say no.

Dr Kreissl has given us valuable hints as to watching the urination of the patient. A great many of the companies require specimens of urine; yet how few practitioners examine as to the manner in which that urine is passed. Consequently, I think it becomes obligatory to watch the urine as it is passed by the prospective applicant for insurance and to know or note the different variations from the normal which Dr. Kreissl has pointed out. Fortunately, again, for the companies, when pus is found in the urine, or where there is a history of blood in the urine, or a history of symptoms of stone in the bladder or kidney, we postpone further investigation; consequently the question of immediate mortality, or the question of diagnosis of the exact pathological condition does not fall to the medical examiner. But the medical examiner should more frequently than he does advise the applicant of serious symptoms which may present themselves to the examiner, and put him in a way by which he may have his case attended to, so that a very serious, or if neglected, fatal disease, may be cut short early.

DR. ARTHUR R. ELLIOTT:—Referring merely to one point Dr. Kreissl has brought out, that is, the condition of bacteriuria, frequently the medical examiner has a specimen or specimens of urine submitted to him by the applicant for insurance that are cloudy; that do not contain albumin nor pus by microscopical examination, yet the urine is cloudy, with a turbidity that can not be filtered out. What bearing has this condition of bacteriuria, which is usually a colon bacillus bacteriuria, on longevity? We see these cases go on for many years in an unchanged condition, without there being an acute exacerbation of the symptoms. Possibly in aggravated cases there may be an epididymitis for a few days which subsides under rest, to be revived again in a year or two, and always with bacteria in the urine meanwhile.

In the last two or three years, since I recorded the observations so kindly referred to me by Dr. Kreissl, I have come across some significant general manifestations in bacteriuria. Recently I saw a man who had bacteriuria, from the history he gave, from ten to twelve years, and he had it when he came to me. He came to me on account of cerebral symptoms—dizziness, loss of visual adjustment, so that he could not estimate distance, and headaches. He likewise had

a sense of general insecurity. I found him suffering from toxemia, with quite well advanced vascular sclerosis, and in the fundus oculi there were quite marked choroidal changes. There was a distant connection between the visual disturbances and ocular findings, and the bacteriuria, as was proved by successful treatment of the latter. I believe in these cases of bacteriuria there is a constant low grade toxemia the result of absorption from the urinary mucosa and from the prostatic apparatus, where active infection exists, of the toxic products of bacillus coli communis and other saprophytic bacteria. Such patients can not be considered good subjects for insurance.

CHICAGO MEDICAL AND CHICAGO NEUROLOGICAL SOCIETIES.

Joint meeting of the Chicago Medical and Chicago Neurological Societies, held May 1, 1907.

In the absence of President Webster, Dr. Henderson, president of the Northwest Branch of the Chicago Medical Society, introduced Dr. Charles L. Mix as chairman of the evening. There were 75 members and visitors in attendance. Papers were then read as follows: Tic, Diagnosis and Treatment, by Dr. Hugh T. Patrick. Symptomatology of Chorea, by Dr. Harold N. Moyer. Diagnosis of Chorea, by Dr. Sanger Brown. Treatment of Chorea, by Dr. D'Orsay Hecht. These papers were discussed by Drs. Julius Grinker and L. Harrison Mettler..

DISCUSSION.

Dr. Julius Grinker:—There are a few things I would like to add to what has already been said, although the subject has been very thoroughly covered by the gentlemen who preceded me. Chorea is a very common disorder; and yet we do not know all about it. Ordinarily, chorea is easily recognized, provided the symptoms are pronounced. There are atypical cases in which the neurologist has to rely on unusual or ill-defined symptoms, and I wish to point out a few things we should look for in every case of chorea.

It has already been emphasized that the jerkings in chorea are of two types, spontaneous, that is, when the patient is at rest, and those that occur during voluntary movements. We might easily make four types of these irregular movements or choreic twitchings: 1, Choreic twitchings occur as soon as the patient performs a voluntary act; 2, irregular twitchings, continuous during rest, cease upon movement; 3, twitchings that are constant at rest, but aggravated by movement, and 4, irregular jerks that occur both at rest and on volition. We observe a patient, see no twitchings and are satisfied there are none. Ask him to extend his finger and put out his tongue and twitchings promptly appear.

Our greatest difficulty will be encountered in differentiating between chorea and tic, which Dr. Patrick has also told us how to do. It must not be forgotten that tic sometimes follows genuine chorea. The preceding condition may have been a Sydenham's chorea in a neurotic subject. This forms the starting point for a genuine tic. We have occasionally observed tic and chorea in the same patient. The chorea got better, but the tic remained.

There are several other symptoms besides twitchings. If you examine carefully you will find in every case of chorea some myasthenia, which may be pronounced or mild in degree. The muscular weakness may exist either with or without the choreic twitchings. In addition, there is usually some inco-ordination, an ataxia, which is as genuine as that of locomotor ataxia. If you ask a patient to walk a crack or make a quick turn, you will notice the same sort of inco-ordination as seen in the tabetic.

Another symptom, one not usually mentioned and not spoken of to-night, is the associated movements which occur in chorea. If you ask a patient to make a fist with one hand, he instinctively makes one with either hand. This is a symptom nearly always seen in cerebral infantile paralysis, either hemiplegia or diplegia. If you will look for this symptom you will find it in many cases of chorea, and it may aid greatly in the diagnosis.

Then there is intermittency of the muscular contractions. If the patient grips

your hand he starts off fairly well; he exerts some power, but after a few seconds his muscles relax and he again reinforces the contractions, then the tendons again relax and so on.

Another symptom that is of value when found is the peculiarity of the knee-jerk: You strike the patellar-tendon and the limb flies up, but it has a tendency to stay up; it does not come down as in health; in other words, there is a discrepancy between the up-and-down strokes. The tendency is for the up stroke to be prompt and the down stroke to be retarded. I have found this symptom in about 25 per cent. of my cases.

Dr. L. Harrison Mettler:—I had hoped that some of the members of the Chicago Medical Society would discuss this subject of chorea. It is evident from what has been said, and from what we read, that our knowledge of chorea is quite indefinite, although as a clinical phenomenon it is probably one of the most common of all neurological diseases that the practitioner meets with. It is a difficult thing to bring anything new to the profession in the present state of our knowledge. I like the name Sydenham's disease better than that of chorea.

It has been said that chorea is not an interesting disease. I wish to contradict that. It is one of the most interesting diseases if we get at it in the right kind of way. We are to-day overwhelmed with observations and facts; but what we want are correlations. We want to know more about this symptom which passes under the name of *chorea*, this dancing of the muscles, which we see, not only in infective, but also in hysterical states. We observe it in Freidreich's disease; we see it in posthemiplegic and prehemiplegic states; we note it in cases of idiocy. We are familiar with various mental conditions simulating these motor manifestations. We see it closely simulated by the so-called tics.

Now, what we want to know is, what is the correlation between Sydenham's infective process, known as chorea, and the other forms which are known as inorganic, psychic and other diseases with choreic symptoms. We want to know the characteristics of one symptom chorea, with its slight variations here and there, as found in various pathological conditions. Until we study it upon that basis we will have everlasting confusion, in my judgment, in regard to the symptoms and treatment of this disease, so-called chorea.

I would like to see the term chorea banished or placed along with such terms as apoplexy, paralysis, headache, hydrocephalus and a lot of other terms we use that mean very little. I wish we could learn to speak of Sydenham's infection or Sydenham's disease, meaning one form only and always keeping it in mind, and not talk about things which have no relationship with an infective process. If we talk about tics, I wish we could get rid of the idea that they have any relationship to or connection with chorea. Tic is purely a psychoneurosis. The jerkings belong to that class of movements which we see in mentally defective children. We have here nothing to do with an infective process such as we recognize in Sydenham's disease. When we learn to regard it on this basis, we will be in a position to better understand the nature of the disease and apply a more rational therapy.

I wish to emphasize what I was glad to hear Dr. Hecht speak about, namely, rest and isolation. I carry this out elaborately. I put my patients in a room by themselves; give them a special nurse.

It may be interesting to some of you, who have not studied the matter closely, to know that these tics, which Dr. Patrick has so ably differentiated for us and discussed, are being considered in the light of pure psychoneuroses. It has been thought that they represent, in a way, like the appendix in man, a sort of vestige of our evolutionary development; and that these tics and tic movements represent dormant activities of ages back in the evolution of the animal, which under some stimulus, such as a certain condition of disturbed sensation, are provoked into actual expression. This is rather an interesting hypothesis, and one that has been advanced by some of the modern physiological psychologists.

CHICAGO MEDICAL SOCIETY.

A regular meeting of the Chicago Medical Society was held May 8, 1907, with the president, Dr. George W. Webster, in the chair. Dr. E. F. Snydacker read a paper entitled Extirpation of Lachrymal Sac; Presentation of Cases, which was discussed by Drs. Nance and Suker. Dr. William Fuller reported a Case of Ruptured Achilles Tendon. Discussed by Dr. Ryerson, and in closing by Dr. Fuller. Report of a Case of Rupture of the Uterus Two Weeks Before Term Through a Cesarean Cicatrix, by Dr. Charles E. Paddock. Dr. Julius Grinker presented the following cases: 1. Incipient Syringomyelia. 2. Progressive Muscular Atrophy of the Peroneal Type. Discussed by Dr. Adolph Genrmann and the discussion closed by Dr. Grinker. Dr. C. O. Young presented the following cases: 1. Carcinoma of Neck. 2. Cystic Atheroma of the Neck. 3. Cancer of the Stomach. All three cases operated on. Discussed by Drs. Fuller and in closing by Dr. Young.

DISCUSSION ON DR. SNYDACKER'S PAPER.

Dr. Willis O. Nance:—I regret that I did not arrive in time to hear all of the essayist's remarks. The operation he describes is a modification of a procedure in vogue many centuries ago. As the pathology of dacryocystoblennorrhea is better understood the surgeon will better appreciate the utter uselessness of the probe and syringe treatment in many of the chronic cases. When one takes into consideration that in one-third of these cases there is partial obliteration of the canal, and in one-fourth more there is total obliteration of the canal, it is easily seen that the treatment usually pursued will, in the average case, be ineffective.

The essential point in operating is to be painstakingly thorough. Unless every particle of the mucous membrane which is diseased is removed there is likely to be a partial restoration of the same and a recurrence of the suppurative process. Therefore, in operating, one must be particularly thorough in removing all of the diseased mucous membrane. In connection with the cutting operation the use of the galvano-cautery is of value. In the operation one must not be content with removing merely the sac, but the point of the galvano-cautery should be thrust down into the nasal duct as an essential part of the operation.

The doctor speaks of the use of the aneurismal needle as a part of his method. I had known of this being used in years gone by. I can not at present recall the name of the gentleman who first employed it, but it has been in use quite a number of years. I remember reading of it in the *Archives of Ophthalmology*, I believe, a number of years ago.

The indications for the operation the doctor suggests are classical, and I agree with him as to the essential points, particularly in regard to those cases that can not attend regularly for treatment; patients living out of town, for instance. In such cases the operation of extirpation is indicated. The results of the operation are usually eminently satisfactory.

Dr. George F. Suker:—This class of cases often first falls into the hands of our colleagues. With the passing of the probe or sounds they are all more or less familiar as adapted to canals and passages other tnan the lachrymal passages. The passing of sound or probe for the cure of chronic suppurative dacryocystoptosis, even if the strictures are overcome and the passages made ever so patent, is seldom achieved. Indeed, the passing of every large probe and sound is scarcely a justifiable procedure from a purely anatomical standpoint; for these sounds usually pass into and through smaller caliber canals, which, in addition, are surrounded by unyielding structures. And it is often the case, probes larger in diameter than the canal itself, are even forced through, and resulting in injuries or fractures to the surrounding bones, crushing the lining mucous membrane, and the establishment of false passages, and even new strictures. You are all more or less familiar how staunch an advocate Dr. Theobald of Baltimore is for the passing of the large lachrymal probe for the cure of this condition. I am sorry to state that many who have followed his teachings have had to regret the employment of the very large-sized probes.

The only valid objection that I can see to the operation is the more or less epiphora which is liable to remain. However, this can be readily corrected by the removal of the palpebral portion of the lachrymal gland. This gland is easy of access and is no harder to remove than the lachrymal sac itself. If this gland is removed, then the absolute cure of the condition is secured. As the lachrymal passage and the tear gland are correlated functionating organs, the destruction of one will materially inhibit the other by reflex circuits. In addition to the points mentioned by the doctor in the performance of this operation, I think it not only obligatory to destroy both puncta, but am a firm believer in the closing of each canaliculus. This is readily accomplished by slitting them in the usual manner and excising the lining mucous membrane and uniting the surfaces by one or two sutures. It is also essential, as the doctor states, to completely remove every vestige of the lachrymal sac and to obliterate either the nasal canal, or at least its upper extremity. This can be thoroughly accomplished by either the cautery or curette.

Dr. Snydacker is certainly to be complimented for the results he has achieved in the cases presented. I am very glad he brought up the subject, because it seems to me to be the only rational procedure to offer an immediate and a lasting cure for a chronic suppurative sac. In fact, the passing of a probe into the lachrymal passages means the passing of the probe for nearly all times. I am a hearty indorser of the operation, and resort to the passing of the probe for the cure of chronic dacryocystoptosis only when not permitted to have my way as to an operation.

A CASE OF RUPTURED ACHILLES TENDON.

WILLIAM FULLER, M.D.

CHICAGO.

This patient met with an accident in which he ruptured the tendo achilles in the left leg. He is about 40 years of age, has always been well, and there is nothing in his history that might have any bearing on the injury received by him.

On Aug. 1, 1906, he was walking up an incline and when he was just in the act of lifting his heel from the ground was kicked just above the heel by his little boy. He was immediately seized with pain, and was able to walk with the greatest difficulty. Considerable swelling occurred and he finally became so lame that he sought the advice of his family physician, Dr. Arbuckle. The parts were very tender, and the swelling was so marked that a diagnosis could not at that time be made. The leg was treated with hot fomentations, and with the disappearance of the swelling a few days later the diagnosis was easily made, when I was asked to see the case. The patient at this time, August 29, was still very lame, unable to put the foot to the floor, and the heel could not be brought down without producing much pain. The ends of the tendon could be plainly felt and were about three inches apart.

An operation, for the purpose of bringing the ends of the tendon together, was advised and performed the following day. A curved incision was made at the side of the tendon forming a flap, which was turned to one side, exposing the widely separated tendon ends. The upper end was the one which, of course, by retracting to a great degree, caused the wide gap between the ends, and no position in which we placed the extremity seemed to offer much help in bringing the upper end of the tendon down. The foot was placed forcibly in the equinus position, the leg was flexed on the thigh and manipulation of the gastrocnemius muscle failed to accomplish the object desired. It was, moreover, seen that sutures as ordinarily placed, would be immediately released by pulling out of the tendon, as the upper end was very friable. A heavy round needle threaded with No. 4 catgut was passed through the upper tendon about one inch from its free end and one-eighth inch from its lateral border; the suture, thus introduced, was securely tied over this considerable segment of tendon, and one end of the suture cut away. A second suture of the same size was introduced on the other lateral border of the same end, and tied and one end cut off as in the first instance. The lower end of the tendon was treated in the same manner by similar

sutures, making four heavy ligatures firmly fixed to the severed tendon ends; then the efforts, first made to approximate the divided ends of the tendon, were repeated, and at the same time traction was made on the heavy catgut ligatures, which enabled us to finally bring the ends of the tendon together, where they were securely fixed by tying the ligatures just described, the ends of which were then cut away. Three or four very fine catgut sutures were then used to more accurately unite the free ends of the tendon, the connective tissue was closed over the catgut knots with a few more small sutures, and the wound was closed without drainage.

The foot was left in the extreme equinus position, a dry dressing applied, and over this a plaster-of-Paris cast was placed. The cast and the dressing were removed on the fourteenth day, showing a wound healed perfectly, and the tendon could be felt running under the skin just as it appeared after the operation. At the end of the third week massage and passive motion were begun, and almost daily improvement was noticed till the end of the tenth or twelfth week, when he was again at his work with the return of function and strength equal to that in the uninjured leg.

I desire to emphasize the necessity and importance of uniting tendons by surgical operations, especially important tendons like the Achilles tendons. The argument advanced by some that spontaneous healing will occur and that the future usefulness of the cases is just as good in unoperated as in operated cases, will not be accepted by all surgeons. We might add that broken bones will frequently unite without effort to reduce them, or appliance to fix them, the result thus obtained causing but slight loss of usefulness to the patient; but I am sure that results following such treatment will in no way compare with the results to be had by perfectly reducing the fracture, and so securing it till union takes place. The same thing may be said of divided tendons, as the reparative process here is similar to that in fractured bones. The argument that some advance regarding the perfect healing of tendons after tenotomies, should not be considered, because the tenotomy is done with a sharp instrument, doing no damage to surrounding structures, no hemorrhage occurs, and the ends of the tendon are not separated any further than is barely necessary to accomplish the object for which the operation was done. The wound is dressed, the extremity is as a rule bandaged, thus limiting muscular action, which is all, excepting the direct approximation of the tendon ends, that we aim at in operating for a tendon severed by injury.

If we will bear in mind the fact that tendons are made up of a special type of connective tissue, have a special structure, as well as a special function, the reason for restoring the continuity of a severed tendon by something other than purely scar tissue, should appeal to any one and to everyone. The structure of tendons is too well known to do more than mention briefly the importance of so replacing the separated ends that the latter may become united by proliferation from the peritendineum and from the numerous septa which spring from this layer of areolar tissue, and which pass in various directions into and through the tendon proper. If the new material which eventually unites the tendon is a product of the tissues just mentioned, restoration of continuity of the tendon with perfect function and structure should be expected. On the other hand, if the ends of a divided tendon are left widely separated, the surrounding tissues lacerated and injured, as they often are, it is plain that a restoration of the tendon will not take place; it is true that the gap will fill up, but it will be from the proliferation of subcutaneous tissue, which is not a specialized tissue; it is nothing more than ordinary scar tissue, a mere plug in other words, to each end of which the tendon ends are attached. The functional result thus obtained may be fair, and it may result in but slight loss of usefulness of the limb, as other muscles and tendons may develop at the expense of the crippled one; but that such results in cases so treated ever equal the ideal results obtained in cases treated as the one exhibited to-night would be hard to believe.

DISCUSSION ON DR. FULLER'S PAPER.

Dr. E. W. Ryerson:—The indication for operation in this case was quite plain. With a separation of two and a half to three inches in an adult it is wise to perform a suture, because, provided union occurred, as it would have done without operation, the gastrocnemius and soleus would have been lifted up by the separation and these calf muscles would have appeared on the leg a couple of inches above where they ought to be. While that would not interfere with function it would weaken the strength, theoretically. Practically, we know it does not because we do hundreds of cutting of the tendo Achillis in a year for club foot, for flat foot, for spasticity and spastic paraplegia, and we never see incomplete union, and until I read Waterman's article last fall I did not know of such a thing as failure of the Achilles to unite. Waterman reports three cases in which they failed to unite. He reports that the tendon in infantile paralysis is degenerated in some cases because of the blood supply and this condition of the tendon prevented union. The only direct indication for such an operation would be to pull down the tendon to prevent raising of the calf. In other cases I have known the lower end of the tendon to be avulsed so there was a big gap left and yet union occurred. Except for the desirability of preserving the contour of the leg the doctor would have gotten a functional result without suturing, but the operation was well performed in this case. If the leg is flexed at the knee and the foot is in a position of marked equinus, it is easy to bring down a tendon to cover a separation of two inches. A month ago I cut a tendo Achillis for flat foot, the patient came back in two weeks and I took off the cast and could hardly, by feeling, tell the place where I had cut the tendon. It unites so perfectly, and the functional results are so perfect, that the interposed connective tissue of whatever type it may be is as good as the tendon.

Dr. William Fuller (closing the discussion):—I have nothing further to say except to refer to the point made by Dr. Ryerson about flexing the knee in operations on cases like these. It serves a good purpose, no doubt, in cases that are recent ones, but was of no help whatever in my case; the tendon ends could be brought no nearer together when the knee was flexed than when it was extended. The ends of the tendon were so widely separated and so difficult to approximate, that it more nearly resembled a tendon from which a piece had been removed than a tendon which had been severed. By forcibly placing the foot in the extreme equinus position, and thus holding it, while making continuous traction on the sutures placed in the sides of the tendon, we were able to secure them in their proper relation to each other.

REPORT OF A CASE OF RUPTURE OF THE UTERUS DURING PREGNANCY THROUGH A CESAREAN CICATRIX.

CHARLES E. PADDOCK, M.D.
CHICAGO.

The specimen which I present was recently removed from a patient upon whom I had previously performed the Cesarean operation. This uterus shows a complete rupture through the old scar. Whether it extended beyond this scar or not I am unable to say. The history briefly is this:

Mrs. W., aged 36, had had four confinements and was in her fifth pregnancy when I saw her in 1905. She gave a history of protracted labors which resulted in three stillbirths and one living child, which died in a few weeks from injuries received at birth. All of the children were said to have been large. The pelvis was generally contracted, the measurements being anterior superior spines, 22 5/10 c.m.; intercrystal, 24 5/10; external conjugata, 18 c.m.; conjugata vera, 9½ c.m. The question in this case of inducing premature labor was considered, but finally decided to carry the patient to term and then perform a Cesarean operation. A time was selected corresponding with the fortieth week of pregnancy, and the operation performed before the onset of labor. The conservative Sänger was done and the incision closed by three layers of catgut sutures. The child, a female, 8½ pounds, was normal in every way and lived for eighteen

months, finally dying of diphtheria. About five months ago the patient came to me, pregnant for the sixth time, and in the fourth month, and I again advised her to carry the case to term and to submit to another operation.

April 19, 1907, at 11 p. m., she was seized with severe abdominal pains, accompanied by an attack of vomiting. The abdomen soon became very tense and extremely tender to pressure. A physician was called and the usual attempt to move the bowels by drugs and high enemata met with negative results. Some opiates had also been given during the night to relieve the pain. The following day at 4 p. m. I saw the case for the first time. A diagnosis of the condition other than a conjecture was impossible. The intense distension of the abdomen rendered it impossible to outline the fetus, and the extreme tenderness made percussion and palpitation out of the question. Fetal heart tones at this time were not heard. Her general condition was good, pulse 90, and the temperature 100. Respiratory movements labored. The patient was removed from her home in the suburb to a hospital some ten miles distant, where she was seen by Drs. Besley and Kanavel. Twenty-four hours after the rupture the abdomen was opened. A considerable amount of dark fluid blood was found, together with many large clots. The fetus, together with the placenta, membranes intact, and liquor amnion were lying in the abdominal cavity. The uterus was firmly contracted and all bleeding had ceased. The child weighed 9½ pounds and was normal in every way. Previous to the rupture, which undoubtedly occurred at the first onset of the pain the night before, the movements of the child had been quite pronounced. From this time, however, active fetal movements were not noticed by the mother.

The patient had noticed during the past three or four weeks a very rapid growth of the pregnancy, and from the amount of liquor amnion which was found the case might be considered as a hydramnios. The uterus was removed by supravaginal amputation. It is now about two weeks since the operation and the patient has had a normal puerperium.

In looking over the literature connected with this subject, I find reports of several similar cases. Since Sänger revolutionized the operation of Cesarean section Prussmann (*Zeitsch. f. Geb. u. Gym.*, Band lv) has found seven cases reported in the literature, besides the one which he reports, and Schenck (*Centralb. f. Gym.*, 32, 1905) reports four cases of rupture through the transverse or Fritsch incision. Undoubtedly careful search of the literature will reveal more of these cases. In the reports the writers seem to lay great stress upon the fact of the difficulty of diagnosing a rupture of this kind.

The question may be asked: Why was not this woman put in a condition at the first operation which would make another conception impossible? And second, why was not pregnancy interrupted soon after the viability of the child? To the first question, I might state that I intend to consider this subject at a subsequent meeting, and will select from the literature all the cases which can be found. As to the interruption of the pregnancy, after the child is viable there is great danger, not only of rupturing the uterus, but of losing the child because of its prematurity. I have advocated that one of the indications for a Cesarean section was the fact that the patient had had a previous Cesarean operation; that to bring on labor at any time was dangerous because of the possibility of the rupture of the uterus. In Prussman's case he found that decidual tissue had invaded the musculature about the incision and even extended to the serosa.

BRANCHIOGENIC CARCINOMA OF THE NECK.

WITH REPORT OF A SUPPOSED CASE.

C. O. YOUNG, M.D.

CHICAGO.

Branchiogenic cancer of the neck possesses a deep scientific as well as a practical interest. Primary cancer in this region is rare, until recently only 48 cases having been reported in the literature. This is not to be wondered at when we consider that their occurrence requires that the patient shall have been subject

to two distinct pathological processes in the same region at two widely separate periods of his existence. In the first place, some parts of the branchial clefts, which occupy the sides of the neck in early embryonic life and resemble the gills in fishes, must fail to obliterate, leaving epithelial structures from the hpyo- or epiblast deeply buried in the deep structures of the neck. In the second place, these epithelial cells having laid dormant for decades, must from some unknown cause set up an abnormal activity or proliferation, causing the formation of these epithelial growths in the neck.

Aside from the morphological interest these tumors possess, they interest the surgeon in a practical way, since they early involve the deep vessels and nerves of the neck, and their successful removal requires an early diagnosis, followed by prompt and courageous operating.

Branchiogenic carcinoma of the neck was first described by Volkman in 1882, who reported three cases of tumor of the neck in men between 40 and 50. The microscopical examination of these tumors showed them to consist of large epithelial cells, with a structure resembling epithelioma of the skin. Nowhere else was a primary carcinoma discoverable. Volkman therefore concluded that these primary cancers of the neck must arise from remains of the branchial clefts. The year after Volkman called attention to these tumors Guttman, in his inaugural thesis in Berlin, discusses branchiogenic carcinoma of the neck and reports one case.

In 1889 Bruns and H. Richard reported two cases. In the same year Freiburg Jodunsky Amuion report three cases. In 1892 Gussenbauer reported eight cases. In 1894 Eigenbrodt reported one case, with no return two years after removal. In 1897 M.M. Berger Plauth reported one case and called attention to the possible origin of these primary cancers in the neck from missplaced portions of the thyroid gland. In 1898 de Montpelier reported three cases and von Bergmann one case. In 1899 Perez reported six cases and gave their histogenesis. In 1900 Victor Vean reported six more cases and summarized the cases up to that time, in all forty-eight cases, with: 31 extirpations, 5 followed by immediate death, 14 with severe hemorrhages, 16 return of the growth within one year, 1 remained cured over one year, 1 remained cured over two years. The ages of the patients were: From 20 to 30 years, 2 cases; 30 to 40 years, 2 cases; 40 to 50 years, 12 cases; 50 to 60 years, 11 cases; 70 to 80 years, 2 cases. Forty-seven cases occurred in men and one in women.

The diagnosis of branchiogenic carcinoma of the neck must be made by exclusion. Meeting with a tumor in the upper triangle of the neck, which lies under the skin platysma and superficial layer of the deep cervical fascia, and is adherent to the deep cervical vessels of the neck, and which possesses all the earmarks of a cancer, then the question arises, have we not to deal with a secondary carcinoma of the lymphatic glands of the neck, and only after having carefully excluded the presence of a primary cancer of the skin, mucous membrane, pharynx, œsophagus and larynx, can we make a diagnosis of branchiogenic carcinoma in the sense in which Volkman first described these tumors?

The treatment of branchiogenic carcinoma of the neck consists in early excision. This is even more urgently demanded in the treatment of cancer of the neck than in case of cancer elsewhere in the body, since cancer in this region early involves the deep vessels and nerves of the neck, and while their resection is not necessarily attended with fatal results, yet it very materially increases the danger of the operation.

Since, however, these patients usually come to the surgeon two to six months after they have noticed the onset of the tumor, it is then often too late for intervention, and the patients die within a few weeks from ulceration into the vessels, followed by hemorrhages or thrombosis of the vessels, or interference with respiration or secondary deposits in other organs.

To prevent the occurrence of these tumors, congenital fistulæ and cysts of the neck should be removed whenever met with, since these serve as nest eggs for branchiogenic carcinoma.

HISTORY.

The patient, a man aged 70 years, a cabinet maker by occupation, born in Germany, came under my care at the Washington Park Hospital Jan. 26, 1907. He comes from a wealthy family and except for malaria as a child he never was sick, and denies all venereal infections. About the middle of September, 1906, the patient noticed a tumor on the right side of his neck, about the size of an English walnut. On Oct. 1 he consulted a local physician, who gave him a salve to apply locally. The tumor has gradually grown larger. For the past three weeks the patient had felt a sensation of beating and hammering on the right side of the head, extending into the occipital region, and had also experienced some difficulty in swallowing.

Physical examination:

Patient is a fairly well-nourished, muscular man; examination of heart and lungs reveals nothing abnormal. A solid tumor the size of a hen's egg was found in the upper anterior triangle of the neck on the right side. It lay deep in the neck, over it the skin and platysma were readily moved, the sternocleidomastoid not so readily movable, and it seemed to be attached to the deep vessels in the neck. I wish to emphasize that except for two glands in the right axilla the size of navy beans no tumor was to be found anywhere upon the skin, mucous membranes, pharynx, larynx, tongue or esophagus, though sought for by myself and the laryngologist to the hospital, Dr. Hakanson. In view of these facts, I felt warranted in making a probable diagnosis of branchiogenic carcinoma of the neck. On Jan. 28, 1907, I extirpated the tumor. An incision was made along the anterior border of the sternocleidomastoid muscle, and crossing this a second incision was made, from the middle of the jaw to the acromion process and the flaps turned back. The internal jugular vein was found to be involved in the tumor mass and was resected for a distance of 2½ inches, the vagus was laid bare for a distance of 4 inches, but was not found to be involved in the growth.

The wound was closed without drainage and healed by first intention. Microscopical examination of the excised tumor was made in the pathological laboratory of the Chicago University, and Dr. H. G. Wells reported squamous cell carcinoma, with no hornifications, no epithelial pearls, a tendency to karyokinesis. Sections from the enlarged gland from the axilla showed no cancer.

The patient made an uneventful recovery and left the hospital eighteen days after the operation. He returned once a week for *x*-ray treatment and on May 1st the hospital laryngologist, Dr. Hakanson, discovered a growth the size of a mulberry on the right side of the larynx, which had all the appearance of cancer. The patient had lately had moderate hemorrhages from the throat.

This case emphasized the difficulty of making a correct diagnosis of branchiogenic carcinoma of the neck. Had this case been reported soon after operation or dropped out of observation and the laryngeal carcinoma therefore remained undiscovered, or had the patent died shortly after operation and no autopsy been held, the case would certainly have gone down as a case of branchiogenic carcinoma.

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CYSTIC ATHEROMA OF NECK.

This patient is a school girl, aged 12 years, whose father, mother, and older sister are living and well. She had measles at 3 and whooping cough at 5 years of age. When the patient was 4 years old her mother noticed a swelling on the right side of the neck, for which patient went to a dispensary, where it was opened, and the wound packed with gauze and dressed every day for three weeks, when it remained healed for six years. Two years ago the swelling reappeared and was opened by a local physician. It reappeared again in a few days and was again opened by the doctor. This did not improve the condition, and a flaxseed poultice was ordered to be applied to the neck. The swelling now rapidly increased in size, and the patient later went to another physician, who opened it, letting out a small amount of a creamy fluid which looked like pus. The wound was dressed for two weeks, when it healed and remained so for one year. Last Christmas the tumor reappeared and ruptured of itself, and has continued to discharge ever since. Since last Christmas the patient has been treating with a local physician, who has been injecting various kinds of medicines into the swelling without benefit. The tumor has never caused any disturbance except for the discharge and a slight discomfort before each time it ruptured.

When I first saw the patient, April 27, 1907, she presented a sinus in the upper anterior triangle of the neck, which led down in the direction of the carotid. There was no discharge at the time, but the patient stated that it would fill up and discharge about every third or fourth day. In the neighborhood of the sinus there were several small scars where the tumor had been opened at various times. The tissues in that location were indurated, and deep in the neck a small tumor could be felt. On April 29 the patient was given a general anesthetic. The sinus was injected with methylene blue. An incision was made along the anterior border of the sternocleidomastoid muscle, and the tract of the sinus carefully followed down to a tumor sac about the size of a pigeon's egg, which was adherent to the sheath of the carotid and the digastric muscle. It contained a material much resembling the contents of a sebaceous cyst. On account of the history of the case, the location, relation, and contents of the tumor, I considered it an atheromatous cyst, but the microscopical examination proved it to be tubercular.

This case shows how persistent the discharge from a tubercular gland of the neck may be, when treated by simply poulticing and incision, and illustrates the importance of operating more radically.

CANCER OF THE STOMACH.

Mrs. A., aged 64 years, came under my care at the Washington Park Hospital, April 16, 1907. She complained of vomiting everything she ate. This trouble had lasted for seven months; at first she would have to vomit every third or fourth day, but of late, this vomiting had become more frequent, until now she could retain no food. The vomitus has never appeared dark or bloody, but has at times contained remains of food eaten several days before. She claims to come from a healthy family, and to have never been sick before onset of present trouble. She is the mother of seven children and has never had any miscarriages. Except for drinking eight to ten cups of coffee daily, her habits have always been good. She complained of great weakness and thought she had lost twenty-five pounds in weight. The physical examination showed that she must have lost greatly in weight. Her adipose tissue had practically all disappeared. She was cachectic. Examination of the heart and lungs showed nothing abnormal. The patellar and pupillary reflexes were normal. Over the flascid abdomen the skin could easily be lifted up in folds. A hard tumor about the size of a hen's egg was to be felt in the epigastrium; it descended with inspiration and could

be readily fixed by the palpating fingers during expiration. Upon inflating the stomach by giving the patient a dram each of bicarbonate of soda and tartaric acid in water, the tumor was seen to belong to the pyloric zone and to be freely movable. The greater curvature of the stomach extended three fingers' breadth below the navel. Auscultation with the stethoscope over the pylorus elicited a high pitched blowing sound as the gas passed through the constricted pylorus into the duodenum. In the right axilla several hard, freely movable glands the size of a butter bean were to be felt. There were no supraclavicular or other glands to be felt. One of the glands from the axilla was excised under local anesthesia and sent to the pathological laboratory of the University of Chicago for microscopical examination. Dr. Wells reported that the gland was tubercular.

A test breakfast showed absence of free hydrochloric acid and presence of lactic acid; no Boas bacilli nor Saracini were found. In view of these findings a laparotomy was made with the view of extirpating the tumor if possible, or else to perform a gastrojejunostomy to relieve the obstruction.

On April 21, 1907, the patient was given, at 5:30 a. m., hypodermically, ⅛ grain of morphin, 1/200 grain of hyoscin, 1/33 grain of cactine; this was repeated at 8:30 a. m., and 9:00 a. m., or fifteen minutes before the operation, a double dose of the same was given and chloroform was administered while making the incision through the skin and peritoneum. No more anesthetic was given during the operation, which lasted one hour and twenty minutes, until the closure of the abdomen was begun, when again a few whiffs of chloroform were administered. The cancer was found to be operable, and was removed with approximately five inches of the pyloric portion of the stomach. The Billroth No. 2 operation was performed and the technic followed was that laid down by the Mayo brothers. It was with considerable difficulty that injury to the middle colic artery was avoided, as it was drawn into a mass of adhesions near the tumor, and could only be freed by careful dissection. On the second day after the operation the patient sat up in bed and took liquid nourishment, and was out of bed on the third day. The wound healed by first intention. The cancer had so occluded the pylorus that when the excised portion of stomach was held under the hydrant the water would only pass through the pyloric opening in drops. Microscopical examination of the excised tumor showed cancer.

DISCUSSION OF DR. YOUNG'S CASES.

Dr. William Fuller:—I would like to ask Dr. Young what it was that led the laryngologist to examine the patient's throat, and how long after the operation it was that the examination was made. We know that laryngeal growths are, as a rule, detected early, owing to the irritation and annoyance they occasion; and in view of this fact, and also the fact that no throat lesion was discovered previous to the operation, is it not possible that the laryngeal growth was a secondary one, and that the neck tumor, after all, was a branchiogenic cancer? The only primary laryngeal carcinoma that has come under my observation, gave rise very early to throat symptoms of the most distressing sort long before secondary occurrence was noticed in the neck. The reverse of this picture may be true as Dr. Young is inclined to believe regarding the case which he presented to-night, but it seems that an element of doubt may honestly be here entertained, and that the carcinoma could have had its origin in the epithelium of an unobliterated branchial cleft.

In studying malignant epithelial growths in the neck, having their origin in epithelium other than that of the skin or the larynx and pharynx, are not always branchiogenous, because several instances of cancer originating in outlying accessory thyroid glands have been reported, and are of course possible. Inasmuch, too, as the normal structure of the carotid gland is not known, and that it is considered by some to have its origin in epithelium, a carcinoma of this structure may be possible.

Dr. C. O. Young (closing the discussion):—The occurrence of hemorrhage from the throat is what led me to refer him to the laryngologist. I had been very hopeful of being able to report this case as one of branchiogenic carcinoma, since

this would have been the first case, so far as I have been able to learn from the literature, reported in this country. I believe, however, that this is nothing but a secondary carcinoma of the lymphatic glands of the neck, and that the primary carcinoma is in the larynx.

Dr. Julius Grinker presented a case of Incipient Syringomyelia and a case of Progressive Muscular Atrophy. The reports will be published in full under original articles.

DISCUSSION OF DR. GRINKER'S CASES.

Dr. Adolph Gehrman:—I would like to ask if Dr. Grinker has had any experience with the *x*-rays in syringomyelia. I have seen a case described that was treated by the *x*-ray with good results.

Dr. Liston H. Montgomery:—Is there any history of specific trouble in the second case?

Dr. Grinker (closing the discussion):—As regards the *x*-ray, I have had no experience with it in syringomyelia. We do not see very many cases of syringomyelia; I have not seen more than half a dozen in two or three years. We usually always see them in an advanced stage. This is probably a case in which the *x*-ray might be tested. I am thankful to Dr. Gehrman for the suggestion. I shall recommend it to the patient. As regards a specific history, I have neither been able to get a history, nor have I found any evidence of it in the second case. Lues is not a cause of progressive spinal muscular atrophy. It may exist, but is only a coincident affection.

CHICAGO OPHTHALMOLOGICAL SOCIETY.

Meeting of March 11, 1907.

F. C. Hotz, M.D., President, in the Chair.

XANTHOMA MULTIPLEX WITH CORNEAL INVOLVEMENT.

Dr. F. A. Phillips presented a boy of 18 with a large, yellowish, broadly sessile, slightly vascular tumor seated upon the upper third of the corneo-scleral limbus of the right eye. A similar growth affecting the fellow eye had disappeared and then reappeared. Typical lesions of xanthoma multiplex of some four years duration were scattered over the body. Nine months before the larynx had been attacked and a tracheotomy performed to relieve the obstruction. Although no part of the tumor of the eye had been removed for microscopical study Dr. Phillips considered these lesions to be identical with those of the skin.

Dr. E. V. L. Brown suggested that the fatty nature of these tumors might make it possible to stain them black in situ by stripping back the conjunctiva and applying Fleming's solution.

A CASE OF COMPLETE ALBINISM.

Dr. Willis O. Nance exhibited a case of complete albinism in a girl of 5 years, in whose family history, dating back to great grandparents on both paternal and maternal sides, no trace of a similar condition could be determined. The patient, born in Chicago, is one of five children, two of whom are dead; the parents and the two remaining children were exhibited before the society. They are of Irish descent and all vigorous, both physically and mentally. There is no history of intermarriage, admixture of negro blood, syphilis, or other dyscrasia. The child's eyes are perfectly normal except for the complete absence of pigment. Nystagmus is present. The refraction is hypermetropic to the extent of 4 D. Dr. Nance agrees with Gould that the albinotic eye is not in any sense a diseased one, and that heredity or consanguinity figure little in its causation.

Dr. H. B. Young, Burlington, has seen three cases of albinism, one a child of 5, the second a young lady of 18, and the third a woman about 45. As in Dr. Nance's case the eyes were normal throughout except for the absence of pigment. When the girl of 5 grew to young womanhood the albinism was much less noticeable. In response to a question by Dr. Guilford, Dr. Nance said that the hearing of his patient was apparently normal, although a careful examination was not made.

QUININ AMBLYOPIA.

Dr. H. W. Woodruff exhibited a patient who had been given 195 grains of quinin in four days some thirteen months ago. Total blindness of sudden onset lasted three or four days, then vision returned and in ten days he could see to get around. During the past months vision has continued to improve slightly and is now 20/60 and 20/40 respectively, although there is a marked atrophy of each nerve-head and typical concentric narrowing of the fields.

E. V. L. Brown, Secretary.

Meeting, April 8, 1907.

Henry Gradle, M.D. Presiding.

A CASE OF SUPERNUMERARY CANALICULUS.

Dr. Willis O. Nance reported a case of supernumerary canaliculus in a man of thirty who complained of bilateral epiphora. There was present a mild chronic catarrhal conjunctivitis, but no history of dacryocystitis, or probing or of other treatment. Two distinct puncta were observed on the left lower eyelid, one in the normal position, the other on the direct marginal line about 4 mm. nearer the inner canthus. Probing and syringing demonstrated two separate and distinct canaliculi which led to the lachrymal sac or to a common duct very near the sac. The epiphora disappeared completely under appropriate treatment. Dr. Nance found but twenty-two cases of supernumerary canaliculi recorded in the literature. The presence of the extra canaliculus has been said by some to be due to the development of two epithelial inshoots, instead of one, from the primary duct.

SHRUNKEN SAC AFTER ENUCLEATION.

Dr. Henry Gradle exhibited a man who had been unable to wear an artificial eye after enucleation of an eye wounded by a pistol shot years ago. The cul-de-sac was enlarged and Thiersch flaps engrafted; these did well, but shrunk considerably. He then put in a Krause flap without stitches and packed the orbit with pellets of gauze. This procedure gave satisfactory results, although there was too much narrowness around the internal canthus which he remedied by Wolff grafts, and the patient now wears an artificial eye with much comfort.

TRAUMATIC XEROSIS OF THE CORNEA.

Dr. Henry Gradle reported a case in a man in perfect health, about 38 years old, who was struck in the left eye by the elbow of a child, 4 weeks ago. The severe pain had been relieved by hot fomentations. Ten days later Dr Gradle found a sharply circumscribed punched out defect on the corneal epithelium over which the smeared secretion of the Meibomian glands collected as an oily scum; boracic acid solution would not moisten the abraded area in the least. No matter what treatment was employed, the effect was practically *nil*. Atropin was continued, dionin was used, and nitrate of silver was applied to the hypertrophied ocular conjunctiva with but temporary benefit. Salicylate of soda and subconjunctival injections were ineffectual. Two days ago, Dr. Gradle scraped the abrasion, which gave the patient more comfort than he had before. The material removed showed the xerosis bacilli, epithelial cells, and some cells with granules that stained with methylene blue; it could not be determined whether or not these were plasma cells. The nasal corner of the abrasion is healing, but otherwise the lesion is unchanged. He curetted again this morning, and where he passed beyond the edge of the abrasion healing has taken place five hours after the operation. The floor of the abrasion looks the same as before.

MOTAIS' OPERATION.

Dr. Oscar Dodd exhibited a patient and photographs taken before and after a comparatively satisfactory Motais' operation for aggravated ptosis.

CORNEAL TUBERCULOSIS SUCCESSFULLY TREATED BY TUBERCULIN OPSONIC INDEX CONTROL.

Dr. Oscar Dodd exhibited this patient, a girl of 14. Six months ago there had appeared a marked episcleral swelling bordering the nasal half of the cornea and infiltration and vascularization of the adjacent cornea. The condition was diagnosed as phlyctenular conjunctivitis but got worse under the usual treatment; the conjunctival swelling then resolved under iodids and mercurials but the corneal infiltration had increased to pinhead sized stroma nodules of yellowish white color. The opsonic index for the tubercle bacillus was examined, and found to be 8.91, 8.69 and 9.2 on three occasions respectively in comparison with a normal 10; a diagnostic injection of 5 mg. of old tuberculin gave a typical general and very marked local reaction lasting several days and evidenced by the appearance of new and larger nodes and the obscuration of the smaller ones by increased infiltration. Examination of the lungs was negative, but during the height of the reaction from the tuberculin there were marked râles in the upper right apex, and marked inspiratory prolongation.

A month later (Feb. 8, 1907) the opsonic index was 10.1; injection of ½ c.c. of Koch's new tuberculin produced some local but no general reaction. February 11th, the opsonic index was 9.3, and on the 13th, 11. On February 14th, she was given two-thirds c.c. of new tuberculin, and on the 16th, the opsonic index was 8.4. There was considerable local reaction. On February 18th, the index was 12.2. She was given ½ c.c. of tuberculin, and on the 20th the index was 10.1; 11.6 on the 22d. Another injection was given on the 22d, and one on the 25th, when the index went up to 15. Since that time it has varied from 12 to 15. The last injection was given March 22d. The corneal infiltration has disappeared, the spots being almost invisible. The general health of the patient has improved very much. The eye is quiet, and the vision 6/6.

CONJUNCTIVAL TUBERCULOSIS.

Dr. Oscar Dodd exhibited a case in which the conjunctival condition closely resembled trachoma except in that the inflammation of the upper palpebral conjunctiva extended forward in front of the tarsus across the sulcus subtarsalis and to the very edge of the line formed by ducts of the Meibomian glands.

AN ORBITAL TUMOR OF TEN YEARS' STANDING. ENDOTHELIOMA.

(Kroenlein Operation)

Dr. C. A. Leenheer. (Entrance Thesis.) Dr. Leenheer presented this patient, a woman of 34, with photographs taken at various periods during past ten years, before and after operation, along with microscopic specimens and three photo-micrographs.

The patient gives a history of protrusion of the eye noted ten years ago, at which time she refused to have the eye removed; the protrusion of the eye increased during subsequent three years, at which time the same advice was again given and again refused. She came in September, 1904, at which time was found the following conditions:

Left eye blind and protruding ¾ of an inch; bulb well covered by the lids; divergent strabismus; vessels of the eye and lid engorged; the disc is best seen by a +4. There is no palpable tumor in the orbit and a skiagraph shows no overgrowth of the bony structures. Transillumination of the frontal sinuses is negative. There is no history of syphilis and anti-sphilitic treatment proved of no avail. March 15, 1905 a Kroenlein operation was performed by Dr. Schroeder. A tumor was found completely filling the muscle crater behind the bulb; the same had to be removed piecemeal, healing followed. At the present time there is evidence of a return of the tumor.

Anatomical examination of the specimens by Prof. Zeit showed numerous firm, irregular tumor masses; one piece had taken the shape of the posterior portion of the muscle funnel and as such was studied in toto. The combined

weight of the tumor was 8.53 grams. Microscopic study showed lymph-angio-endothelioma-perivascularis.

Dr Leenheer then gave an extended review of the Kroenlein operation and the literature of endothelioma, and closed with the following:

CONCLUSION.

1. The pathologists differ very much as to classification of endotheliomata, but agree that endothelioma are derived from the endothelial lymph spaces and blood vessels, and that endotheliomata should be classed under sarcomas. They are of slow growth and do not form metastases.

2. The case reported in this article upholds this opinion.

3. In most of the cases reported as endotheliomata in the literature, the authors do not go into the microscopical findings. If all the orbital growths were examined microscopically, more endotheliomata would be found.

CONTUSIONS AND CONCUSSIONS OF THE CHEST.*

EMANUEL FRIEND, M.D.

Instructor in Surgery, Rush Medical College, Attending Surgeon to the Michael Reese Hospital, Assistant Attending Surgeon to the Presbyterian Hospital.

CHICAGO.

We may properly divide the injuries of the thorax into two headings, namely, contusions and concussions, which should not be confounded with one another, as each frequently gives rise to a distinct train of symptoms. By contusions we mean those injuries to the chest, usually produced by blunt force, in which the skin and subcutaneous tissue is but slightly affected, but with severe injury to one or more of the thoracic organs. Concussion means that there are apparently no skin or subcutaneous or intrathoracic injuries, followed by a distinct symptom-complex.

The simplest form of contusion is that in which the blow, kick or violence has produced a slight ecchymosis of the skin, with at times a collection subcutaneously of extravasated blood, namely, a hematoma, which, when small, may be absorbed in a short time, and which at times is very extensive, and whose treatment is the simple application of ice, compression bandage, massage, although in tubercular individuals the same may form an abscess and give cause for incision and curettement. Occasionally incision is instituted in those which do not go into abscess formation.

Zincke, in the *Charite Annals* of 1884, reports two cases of extensive hematoma the size of a hot water bag, which extended from the lumbar region up over the scapular, lifting the skin from off the spinous processes of the vertebra, resulting in complete absorption. Letemeur has seen the subcutaneous rupture of the pectoralis major muscle. In many cases the cause is from a spent ball or large projectile, or being run over or being crushed by the bumpers of railroad cars, and falls from a considerable height.

The skin and external evidences of injury may be practically *nil*, while the injuries of the thoracic organs may be of the greatest magnitude. The symptoms of such are the symptoms of shock, dyspnea, cyanosis, coldness of the extremities, pallor and general collapse. Laurent described the case of a 16-year-old boy who was run over the chest by a wagon wheel, in whom there were no visible external signs of injury except slight ecchymosis. Patient was unconscious and cyanotic, with mainly abdominal breathing. He died two and a half hours after the injury. Postmortem revealed considerable rupture of both lungs and hemothorax.

Lonsdale found in consequence of a compression of the thorax a rupture of the trachea at the bifurcation, and Majorlin relates the case of a boy run over by a wagon wheel in which the postmortem revealed the left pleural cavity filled with blood and air. The pleura was intact, but the lung showed two ruptures. The right chest was intact. The third and fourth ribs on the left side were

* Read before the Aux Plaines Medical Society.

fractured and the third on the right side, but only toward the skin surface, and not even through the periosteum, consequently the fractures could not have caused the rupture of the lung.

Robert McDonnell reported the case of a young man run over by a wagon wheel. The patient complained mostly of abdominal pains. There were no fractures of the ribs or vertebræ and no hemoptysis until shortly before death. The accompanying collapse soon disappeared. The left pleural cavity became tympanitic. The heart was displaced toward the right, and finally an extensive dulness manifested itself over the left chest, which, by aspiration, resulted in the withdrawal of 22½ ounces of blood. The patient died on the tenth day after the injury. The postmortem revealed a complete rupture of the left lung and the pleural cavity filled with blood and air. Marked depression of the diaphragm, and the heart dislocated toward the right.

The source of the blood is generally from the parenchyma of the lung or the bronchial vessels, when a rupture of the larger vessels is ruled out and is generally absorbed without marked reaction. Riedinger gives the following history of an interesting case: A man fell into a deep excavation and sustained fractures of several ribs and also an impacted fracture of the surgical neck of the humerus with a dislocation of the head of the bone, which was not replaced, although the patient was able to use the arm in consequence of a false joint being formed. The patient died many years later of an intercurrent trouble, and the postmortem revealed a rupture of the diaphragm, through which the greater part of the liver and several coils of small intestines presented themselves. The patient had not complained of pain or discomfort, which caused the condition to be entirely overlooked. Leichtenstern diagnosed a similar case; the patient died of overdistension of the stomach, and postmortem revealed the diagnosis correct. Such cases should be carefully examined. Butlin reported a case which had been caught between railroad bumpers and sustained a fracture of the seventh, eighth, ninth, tenth and eleventh ribs, and was aspirated for dislocation of the heart. Postmortem revealed the stomach, spleen and transverse colon in the pleural cavity. Similar cases have been reported by Bonilly, Seuft, Kuster, Stretter, Settegast and others. The specimen which I present to you this evening is one of traumatic diaphragmatic hernia taken from a boy 6 years old, who was run over by a beer wagon April 4, 1905, whose history reads as follows:

Male, aged 6, American; admitted to Michael Reese Hospital April 4, 1905.

Diagnosis.—Injury to chest and abdomen; rupture of the kidney.

History.—April 4, past history and family history negative.

Yesterday afternoon about 5 o'clock patient while running across the street in front of his home was run over by a rapidly moving beer wagon. Patient's father thinks that one wheel went over the abdomen, the other over both thighs. The boy was dazed, but not unconscious, and was carried to a nearby physician's office, later to his home. Last evening the boy complained of severe pain in the lower abdomen, pain gradually getting worse this morning. Patient has vomited several times since the accident. Vomitus consisted of the food ingested and did not contain any blood. The first urine voided last evening after the accident contained blood. This morning the boy was unable to urinate; a specimen obtained per catheter was very dark in color, but contained no blood. Embarrassed respiration developed this morning. Boy complains of no pain nor loss of function of the lower limbs.

Physical Examination.—Well-developed young male. Head negative; mouth contains some decayed teeth; a few of the upper set absent; neck negative.

Chest.—Heart can not not be outlined. Sounds heard in the mitral area, but more distinctly below right nipple. Pulse rapid, small, low tension; apex impulse below the right nipple.

Lungs.—Breath sounds distant in left lung; roughened in right. Left lung tympanitic anteriorly; dull posteriorly. Line of dulness passes anteriorly in a curved line with convexity downward.

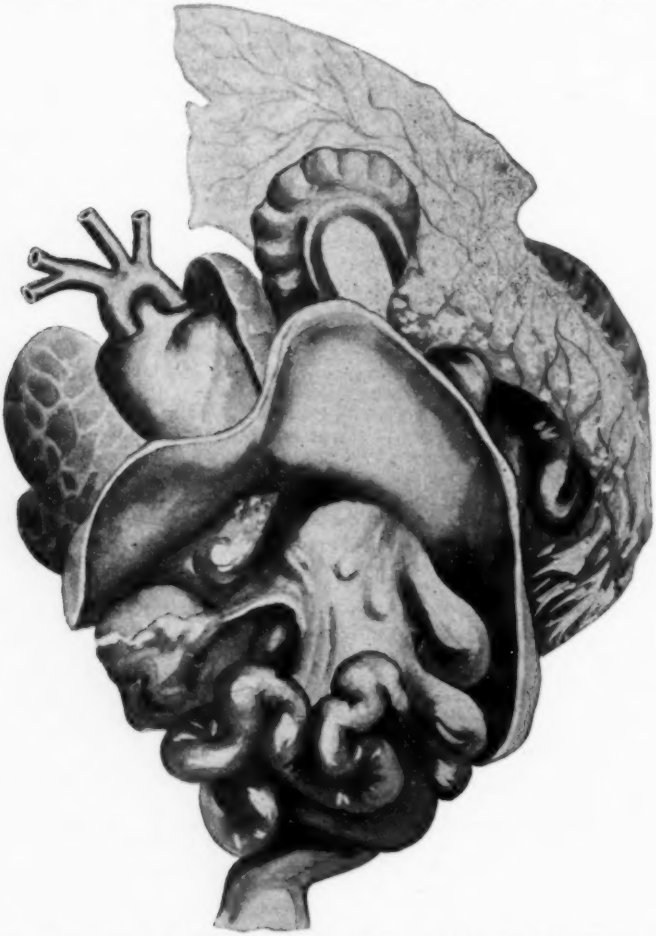
Abdomen.—Some ecchymosis in right lower abdomen.

Extremities.—Ecchymosis on inside of left thigh.

Bony System.—Negative; no fractures.

Operation.—Dr. L. L. McArthur.

After preparation, a median incision about 4 inches long was made reaching as high as the umbilicus. A subperitoneal hematoma was found reaching well up on the bladder from behind. A two-inch incision was made in the left flank by a muscle-splitting method reaching down to the peritoneum, a double drainage tube was inserted down to the bladder and stitched in. The peritoneal



cavity was washed out with normal salt solution. Incisions closed. Patient died April 6. Postmortem revealed the presence of a diaphragmatic hernia, as shown in the accompanying picture. The colon and loops of small intestine being found in left pleural cavity, pushed through a rent in the diaphragm. The displacement of the heart and lungs markedly to the right accounting for the peculiar physical findings.

An interesting fact is the occurrence of hernia of the lung in consequence of contusions without external wounds. In Wahl's case the second and third ribs

were fractured, and the hernia manifested itself only after some days in consequence of a severe attack of coughing. It was very painful and tender to pressure, and disappeared spontaneously. The orifice was the size of a quarter and could plainly be felt. Weis reported the case of a laborer with fractures of the third, fourth and fifth ribs, in consequence of which a hernia the size of the palm of the hand was apparent. Intercostal pains simulating neuralgia are occasionally seen after simple contusion. Never give a prognosis in such cases of contusion, even with slight or no external manifestations, until a thorough examination has been made some days after the swelling has disappeared.

The affections of the lungs and pleura, in consequence of contusion, might be classified as follows:

1. Contusions of the lungs and pleura. (*a*) Superficial and subpleural ecchymoses; (*b*) hemorrhagic infiltration of the lung tissue; (*c*) apoplexy of the lung.

2. Solution of continuity of the lungs and pleura. (*a*) Tearing and crushing of the lung, at times complicated with subpleural, interlobular emphysema; (*b*) tearing of the pleura, complicated with pneumothorax and hemothorax, occasionally with subcutaneous emphysema.

3. Inflammatory affections of the lungs and pleura, secondary affections. (*a*) Lobar pneumonia and pleuropneumonia; (*b*) pleuritis; (*c*) rarely gangrene lung.

The affections of the pericardium and heart might be classified as follows: (*a*) Subpericardial ecchymoses, hemopericardium, pericarditis sicca, pyo and pneumopericarditis; tearing of the pericardium. (*b*) Extensive hemorrhages in the heart muscle, myocarditis, rupture and gangrene of the heart. The mechanism of such injuries can be explained in the following way: Rupture of the lung and pleura may occur when at the moment of sudden impulse, to the chest, the glottis is closed and the lung distended to a considerable degree, especially when the bony chest wall is elastic. Bonilly has shown that a blow on the lung of a corpse does not as a rule produce a rupture, but mere flattening of the same, while by tying the contiguous bronchus a similar blow will produce a rupture of the lung tissue. In case of rupture of the heart there are generally underlying degenerative changes. The inflated lung does not protect the heart and chest organs from sudden blows, still it is very doubtful whether such protection is of great consequence. The esophagus may also be ruptured and the food enter the pleural cavity and infection of the mediastinum take place.

Many patients apparently improve from the start, but frequently after a few days, show the signs and symptoms of a long and tedious disease. For days there will be present bloody expectoration, severe pains, high fever, dyspnea, etc., and frequently die of secondary complications. Krönlein has noted a pleuritis, sicca, Kuster a serous pleuritis, which necessitated aspiration. Wahl has observed a pneumonia with stormy respiratory symptoms after contusion, and Billroth has observed pleuropneumonia.. Litten has recently called our attention to the favorable prognosis of contusion pneumonia, although presenting all the symptoms of the idiopathic variety.

Other cases, again, withstand such injuries well and recover in a short time. Such cases have given rise to the supposition that contusions of the chest are of minor magnitude, but Pirogoff has correctly stated that such injuries are as severe as penetrating wounds of the chest. The prognosis depends on the extent of the injury, the constitution of the individual and the surroundings of the patient. Many patients have died due to unhygienic surroundings, who could otherwise have been saved. During the Civil War, of 17 cases without apparent external injury, 13 died within twelve hours.

Concussion of the thorax is probably analagous to concussion of the brain; its existence is denied by many authors, as was for many years concussion of the brain. It manifests itself after a severe blow on the chest, usually by blunt force, with symptoms of shock, such as irregular, short and rapid respirations, unconsciousness, great pallor, localized perspiration, rapid, thready, irregular pulse and death, without demonstrable gross pathologic changes, either without or within the thorax.

Riedinger and Meola have made original investigations upon the lower animals,

and Riedinger has come to the conclusion that the symptoms are due to lowering of the blood pressure in consequence of intrathoracic stimulation of the pneumogastric nerve and direct concussion of the heart, and to a less degree to defective circulation in the brain in consequence of the diminished blood pressure. Paralysis of the heart in diastole may result from violent concussion of the same. Hofman states that such symptoms of shock may be occasioned by blows on the thorax, causing concussion of the epigastric region and traumatic irritation of the splanchic nerves. Meola's idea after experimentation was that in consequence of concussion of the thorax there took place an irritation of the vagus and paralysis of the sympathetic nerves, which produced an anemia in the medulla, and in this way caused a direct influence in slowing or stopping circulation and respiration. Nelaton reported the case of a patient, hauling a loaded wagon through the streets, by means of a strap across the chest, which broke and caused him to fall heavily upon the chest, with consequent, immediate death and absolutely no demonstrable, intrathoracic or abdominal lesion at postmortem. Meola reported the case of a diabetic who was struck by a stone on the chest and died immediately. Riedinger reports the case of a coachman who was struck by a wagon pole over the middle of the sternum. He fell unconscious, was pale and exhibited no signs of life, was carried to his bed; after a considerable time he gained consciousness. At the point of impact there was noticeable a slight ecchymosis. In deep inspiration patient had a slight sticking pain and slightly bloody sputum in the expectoration. Careful and repeated examinations revealed negative results. The patient attended to his regular duties after two days. The pain continued for some time, although did not hinder him from his work. This case, with the absence of all symptoms, except those of concussion, and with the rapid recovery, illustrates the difference from contusion.

Diagnosis.—The differential diagnosis between the two conditions is not always easy. In case the patient lives it may not be determined for some days. The diagnosis of concussion would be probable wherever we have no fracture of the ribs or sternum, no marked symptoms on percussion or auscultation, and where the progress of the affection is rapidly toward favorable termination. The diagnosis of contusion is more probable in these cases where there is more or less bloody expectoration, where a hemothorax or pneumothorax can be demonstrated or the general pallor exists for a long time, the respiratory murmurs change and dyspnea and fever occur.

Prognosis.—In concussion death is usually seldom in the mild cases. The patients recover without marked symptoms. In the severe cases the symptoms may persist for days and death occasionally may result instantaneously. In contusion with injury of the thoracic organs the prognosis is quite different. A great many die immediately, due to rupture of the heart or large blood vessels. Schuster reports 82 cases; 53, 64 2/10 per cent., died within three minutes; 24, 29 1/3 per cent., died immediately, while 29, 35 1/3 per cent., died some time after the injury. In spite of these figures many cases recover, when a blood extravasation is absorbed, an infection has run its course or a consequent pneumonia has terminated favorably.

Treatment.—The first indications in concussion is to supply the anemic brain with blood and restore the tone of the vagus. This is accomplished by putting the patient to bed, elevating the foot of the bed and when indicated artificial respiration is instituted, rubbing the body with alcohol and subcutaneous injections of ether or camphorated oil. If the patient is able to swallow, black coffee may be given internally; if not, per rectum.

In contusion, Stromeyer has strongly recommended venesection in severe cases. In hemothorax, with severe symptoms of compression, it is well to incise and empty the chest cavity, but only when these symptoms are alarming, as too early evacuation of an accumulation of blood, for instance, from a ruptured lung, is liable to cause a renewed hemorrhage, which may be fatal. Ice bags locally applied and morphia hypodermatically in such cases do good. In consequent pleurisy with effusion, it is justifiable to evacuate by aspiration.

FULTON COUNTY.

The thirty-ninth meeting of the Fulton County Medical Society was called to order by President Chapin at Canton, Ill. Dr. Baxter of Astoria presented a paper on Eclampsia that was freely discussed by all present. Dr. Veda C. Murphy of Cuba presented a paper on the Opsonic Index. Dr. Coleman of Canton presented a paper on Leukemia. The president appointed Drs. Rogers, Baxter and Scholes to prepare a program for the October meeting. Applications for membership were read from Drs. E. M. Price of Astoria; D. D. Kirby and J. C. Simmons of Canton. They were duly elected to membership. Dr. Charles Moorhouse of Marietta was also elected to membership. Dr. Scholes moved that the regular program committee arrange the programs two meetings in advance. Carried. The program committee reported the following, which was adopted, for the October meeting: Annual address, President L. R. Chapin; Malaria, W. R. Blackburn; Operative Appendicitis, A. C. Cluts; Trifacial Neuralgia, C. D. Snively; Neurasthenia, P. S. Scholes; Duodenal Ulcer, F. C. Robb; Typhoid Fever, Martha Richardson; Infant Feeding, Maud T. Rogers. Those present were Drs. Chapin, Baxter, Connely, Nelson, Coleman, H. H. Rogers, Hays, Putman, Robb, Regan, Maud T. Rogers, Shallenberger, Ray, Scholes, Veda C. Murphy, Kirby, Simmons, Blackburn and Adams.

D. S. RAY, Secretary.

LOGAN COUNTY.

The Logan County Medical Society held its regular bi-monthly meeting in the lecture room of the Deaconess Hospital, Lincoln, Thursday, June 27, 1907. Application for membership was received from A. D. Kirby of Chestnut, Northwestern '07, and upon the recommendation of the board of censors he was received into the society. Drs. Montgomery and Woodward of Lincoln presented a very interesting case of acromegaly in a man of 35 years. The case was of about seventeen years' standing. Hypertrophy well developed in legs and arms. Patient has been in habit of eating two pounds of sodium carbonate a week. Bones are nodular, as determined by palpation and *x*-ray.

McLEAN COUNTY.

The June meeting of the McLean County Medical Society was held in the City Hall, Bloomington, at 8 p. m., on June 13, 1907, having been postponed one week on account of the high school commencement. The meeting was called to order by President Godfrey and the minutes of the last regular meeting were read and approved. Dr. J. L. Yolton reported for the board of censors favorably on the application of Dr. J. W. Dobson, who was immediately voted into the society. Dr. R. G. Yolton reported a case of extrauterine pregnancy operated at about the ninth month with recovery. The fetus was exhibited. Also a case of uterine fibroid with specimen. Dr. E. L. Brown reported a case of intussusception of twenty-four hours' standing in a child ten months old. Reduced by large injections while holding child by feet with head down. Dr. R. A. Noble reported two cases, one of extrauterine pregnancy of about three months' duration, the other of placenta previa at term. The former was operated on and specimen exhibited, the latter controlled by podalic version and Credé method after delivery. Dr. F. C. Vandervort referred to a case of extrauterine pregnancy occurring in his father's practice years ago in which the placenta was removed and an abscess which formed in the pelvic cavity was opened and fetal parts discharged through opening, which later healed and the patient recovered and is living to-day at about 75 years of age. Dr. Bath reported a case of placenta previa with fatal hemorrhage. Dr. E. L. Brown also reported a placenta previa. Dr. Bath, delegate to the state convention made his report, emphasizing the importance given by the house of delegates towards more thorough organization of the profession to secure better legislation in order to combat 'isms, 'pathies, etc. He said the state has gained 500 members to the medical defense fund, while McLean County

has lost about twenty. This should not be. Dr. J. W. Smith, councilor for the district, spoke in behalf of better organization and unity of physicians. He stated that forty suits had been brought to naught through the legal defense movement; that there is $1,900 in the treasury, which money is to be used to defend malpractice suits and is held by the state secretary. Dr. Smith also thought more effort should be made to increase our membership in the county society. Both Drs. Bath and Smith spoke of the advisability of taking into our society all ethical physicians in the county who are licensed to practice medicine by the state regardless of the school from which they graduated. Dr. R. A. Noble made a motion that the McLean County Medical Society have a "Boosters' Committee," which should include the councilor, appointed to increase its membership. Motion carried. The president appointed Dr. E. L. Brown, Dr. J. W. Smith and Dr. Vandervort as such committee. The name of Dr. Arthur E. Midgley was proposed for membership and referred to the board of censors. Dr. J. W. Smith recommended and Dr. Vandervort made a motion to the effect that the judiciary committee look up an attorney for the legal defense work and be given power to act, in view of the fact that the society does not meet until September; also that the secretary notify said committee of such motion. Motion carried.

F. H. GODFREY, President.
O. M. RHODES, Secretary.

MERCER COUNTY.

The Mercer County Medical Society held its annual meeting in Aledo, Ill., May 14, 1907.

Drs. Reynolds, McClanahan, McKilvey, Klinsmid, Mackey, Ramsey, Boyer, Wallace, Sells, Burtnette and Mesdames, Ramsey, Boyer, Wallace and Sells assembled at the Merchant's Hotel for dinner, after which the doctors adjourned to the court house for the afternoon session. The meeting was called to order by the president, Dr. V. A. McClanahan. The following committees were appointed: Necrology: Reynolds and Ramsey. Nominations: Boyer, Mackey and Reynolds. The committee on necrology reported resolutions as follows:

WHEREAS, The Great Physician has called from the ranks of the Mercer County Medical Society three of its beloved brethren; and

WHEREAS, We, the surviving members, are met in annual session; be it, therefore,

Resolved, That in the deaths of Dr. George Irvin, Dr. Harry S. Allen, and Dr. J. S. Hamilton, our society has lost three upright and worthy members, the profession has lost three able practitioners, and the State of Illinois three honorable citizens; be it further

Resolved, That these resolutions be kept on the records of our society and a copy be sent to each of the bereaved families.

J. WILSON RAMSEY,
M. G. REYNOLDS,
Committee on Resolutions.

Drs. Walter N. Boyer and A. N. Mackey, committee on ethics, reported as follows:

WHEREAS, The publishing by the press of the names of physicians attending upon medical or surgical cases is contrary to the ethical spirit of the members of this society; therefore, be it

Resolved, That the secretary request the publishers of all newspapers in Mercer County to refrain from mentioning the name of the physician in attendance upon any sick person, so far as is consistent and practical.

Officers elected: President, Dr. Walter Miles, Viola; vice-president, Dr. J. W. Ramsey, Aledo; secretary-treasurer, Dr. I. E. Burtnette, Joy; delegate, Dr. A. N. Mackey, Aledo; alternate, Dr. G. H. Moore, Joy.

Address by President V. A. McClanahan was given and a motion was carried that a copy of the president's address be sent to the State Journal and a vote of thanks be tendered him for his splendid work as president of the society. Dr. J. E. Kleinsmid, read a paper on Diphtheria. Discussion by Drs. Boyer, Sells, McClanahan, Ramsey and others.

EXPLORERS.

V. A. McClanahan, M.D.

(Abstract.)

Dr. V. A. McClanahan read his presidential address, taking for his subject "Explorers," in which he said the world may be divided into two classes, explorers and exploiters. The explorer always wants to know for the sake of knowing and unselfishly informing others. The exploiter always wants to know so that he may use his knowledge for his own selfish purposes. There may be a place in trade for the exploiter. In a profession he would seem to be out of place. The difference between a trade and a profession has been well expressed as follows:

"Trade is occupation for a livelihood; profession is occupation for service of the world. Trade is occupation for joy in the result; profession is occupation for joy in the process. Trade is occupation where anybody may enter; profession is occupation where only those who are prepared may enter. Trade is occupation often taken up temporarily until something better offers; profession is occupation with which one is identified for life. Trade makes one the rival of every other tradesman; profession makes one the cooperator with his colleagues. Trade knows only the ethics of success; profession is bound by lasting ties of honor."

When any professional man allows himself to become a mere tradesman, God pity the people among whom he lives. Trade might have said to Jenner "Patent your idea of protecting helpless humanity." Profession said "Give it freely to the world." While the vaccine discovery was progressing, Jenner said the joy he felt at the prospect of being the instrument destined to take away from the world one of its greatest calamities almost overwhelmed him. Could he have had the same joy in a mint of money? Paré, instead of keeping secret his discovery of the ligature, gave it freely to the world, saying in the preface of his large work on surgery, "For my part, I have disposed liberally to everybody the gifts that God has conferred upon me, and I am none the worse for it; just as the light of a candle will not diminish, no matter how many may come to light their torches by it."

Dr. McClanahan then took up the subject of anesthesia and paid a tribute to Morton, the practical man, and mentioned Pasteur, Lister, Koch and Walter Reed as pioneers in their several branches and closed by saying, "And so let us always be progressive and helpful, open minded, courageous and sympathetic. And let us not be mossbacks. Elbert Hubbard says that no joy in the world is like the joy of putting salt on the tail of a new idea. We all are and always can and should be, explorers."

MORGAN COUNTY.

The Morgan County Medical Society held its regular meeting at the Library June 13, 1907, at 8 p. m., President E. L. Crouch in the chair. Fifteen members present. The paper of the evening was by Dr. Bowe. Subject, Ether as an Anesthetic. A discussion arose as to whether or not our society should have an alternate delegate to represent us at the state society in case the regular delegate found it impossible to attend. Action deferred until election of new officers, which occurs in December.

Allen W. King, Secretary.

ROCK ISLAND COUNTY.

The usual bi-monthly meeting of the Rock Island County Medical Society was held in Moline at the Manufacturers Hotel June 18, at 7 p. m. After dinner the meeting was called to order by the president, Dr. S. B. Hall. The following members were present: Drs. R. C. J. Meyer, Browning, Huiman, Peterson, Youtz, Long, Ludewig, Gardner, Minnick, Hall, Lamping, First. Dr. G. F. Johnson of East Moline and Dr. W. T. Huiman of Moline were elected to membership. The scientific program was then taken up. Dr. S. B. Hall of Rock Island gave an in-

teresting report of a case of extrauterine pregnancy. Dr. R. C. J. Meyer followed with a report of a case of prolonged pregnancy with death of the fetus. Reports of the annual meeting of the state society were given by Drs. First and Minnick, after which the society adjourned to meet again in August.

VERMILION COUNTY.

The Vermilion County Medical Society met June 17 in the City Hall at Danville, called to order by the president, A. J. Leitzbach. Program: Anatomy and Physiology of the Liver, S. L. Landauer; Etiology and Differential Diagnosis of Gallstones, E. B. Cooley; Pathology of the Gall Bladder and Ducts with Surgery of the Gall Bladder, H. W. Morehouse; Latest Opinions as to the Effect of Drugs on the Function of the Liver, H. S. Babcock. Dr. Cooley was unavoidably absent, but the other papers were concise, bringing out an interesting discussion. This being the last meeting before the summer vacation the committee had prepared a smoker and lunch following the program. E. E. CLARK, Secretary.

NEWS OF THE STATE.

Aurora reports 35 cases of smallpox in 13 families.

Dr. William J. Rideout, Freeport, has returned from Europe.

Dr. Alexander Gray has been elected health officer of Savanna.

Three homes in Belvidere are quarantined on account of smallpox.

Dr. Tolbert F. Hill, Athens, reports a number of cases of scarlet fever.

Dr. George W. Hall and family have returned after seven months in Europe.

Dr. William B. Kunze has been appointed health commissioner of Belleville.

The state has purchased 1,200 acres of land at Newcastle for the state epileptic village.

Three cases of smallpox are reported to exist at the University of Illinois, Champaign.

Dr. S. C. Thompson, of Arrowsmith, has bought the practice of Dr. Vanderhoof, at Byron.

By the will of the late John C. Proctor, Peoria, $300,000 is given to the Cottage Hospital in that city.

Several cases of smallpox have been reported to the State Board from Tolono, Champaign County.

Dr. P. S. Weidman, Edwardsville, was found unconscious in his room July 9, and is still critically ill.

Dr. Arthur Leipold, Moline, has been appointed house physician at the University of Iowa Hospital, Iowa City.

Dr. Channing W. Barrett has recently been appointed a member of the gynecologic staff of the Chicago Policlinic.

Dr. N. S. Davis, of Chicago, has resigned as dean of the faculty of the Northwestern University Medical School.

An automobile ambulance, equipped with the latest appliances, has been added to the equipment of Cook County Hospital.

Dr. Allen M. King, Jacksonville, was thrown from his automobile in a collision with a telephone pole in Virginia June 18.

Dr. W. A. Evans, Health Commissioner, is making a tour of the eastern cities, studying the various departments of health.

Malignant diphtheria has appeared in Arenzville. There has been one death in one family and four children are seriously ill.

Dr. Arthur R. Edwards has been elected dean of the Northwestern University Medical School to succeed Dr. N. S. Davis, resigned.

Dr. Thomas W. Curry, Streator, was operated on for appendicitis in St. Mary's Hospital in that city June 17, and is reported to be doing well.

Dr. James B. Herrick, of Chicago, received the honorary degree of A.M. at the annual commencement exercises of the University of Michigan June 20.

The inspector of the State Board of Health reports that there have been 112 cases of smallpox in Peoria and there are still 8 cases in the Isolation Hospital.

La Rabida, the Jackson Park sanitarium, of Chicago, had its formal opening, June 20, for members of the board and guests. On July 1 the institution was opened to the public.

A contract has been let for a building to accommodate 10 additional patients at the Edwards Sanatorium, Naperville, Ill., bringing the capacity of the institution up to 25 patients.

Dr. John F. Keefer has been elected president, Dr. Charles Parker, vice-president, and Dr. Stephen A. Allen, Rock Falls, secretary-treasurer, of the Sterling and Rock Falls Physicians' Club.

Dr. Don A. Vanderhoof, of Byron and Wheaton, Ill., with his wife and daughter, sail for Vienna, August 3, by the Mediterranean route. Dr. Vanderhoof will spend the winter in special work.

The Chicago Tuberculosis Institute is preparing to distribute copies of a consumption catechism prepared by the Board of Health of New York, among 600,000 public school children of Chicago.

Dr. Arthur Hitchens, Director of the Antitoxin and Vaccine Laboratories of the H. K. Mulford Company, is in London, engaged with Prof. E. A. Wright in the study of opsonins and vaccine therapy.

The Chicago Tuberculosis Institution has opened a free clinic for the diagnosis and treatment of tuberculosis at the Olivet House, 34 Vedder street, which is opened to patients Monday and Thursday at 10 a. m.

The internes and ex-internes of the Mercy Hospital of Chicago have recently formed an association. Its members consist of all those who have served as internes of the hospital, and at present numbers over 150.

The Northwestern University Medical School had its annual commencement exercises June 20 and conferred the honorary degree of LL.D. on Dr. G. H. Simmons, editor of *The Journal* of the American Medical Association.

Smallpox is reported at Belvidere, Iroquois, Winslow, Mechanicsburg, and Thomasboro. At Mechanicsburg no quarantine has apparently been enforced, and the smallpox patients have been mingling with others not affected with the disease.

Smallpox is reported from Aurora. Dr. Charles E. Crawford, Rockford, inspector for the State Board of Health, is in charge of the situation. At present there are nine houses under quarantine and in one house there are said to be 13 patients.

On June 14 burglars entered the North Shore Health Resort, Winnetka, Ill., and secured several hundred dollars, assaulted a woman patient of Illinois and an attendant and escaped in a buggy. The robbers have been captured and have confessed.

Lectures to women and girls in Chicago were delivered each Saturday afternoon in July at the Public Library and at the Academy of Science, Lincoln Park, under the management of the Chicago Women's Club and the Chicago Society of Social Hygiene.

A summer student at Green Hall, one of the dormitories for women at the University of Chicago, was removed to the Isolation Hospital July 10 on account of smallpox, and the 60 students in that dormitory were vaccinated by officials of the health department.

An entertainment was given by the Hull House Woman's Club of Chicago, June 23, under the auspices of the Chicago Branch of the Jewish Consumptives' Relief Society of Denver, to raise funds to assist in building an addition to the society's hospital in Denver.

Another night medical school has begun work in Chicago under the name of the Reliance Medical College. This makes four schools of this kind in the city. Its announcement states that 34 physicians have been enrolled on the faculty and that a class of 60 has already registered.

The Summer Tent Hospital, established by the *Chicago Tribune* early in June at Algonquin, has every tent filled. The new permanent hospital is expected to be ready to receive patients July 15. The tent sanatorium is in charge of trained nurses, and Dr. John A. Robinson is attending physician.

An active campaign is planned in the city of Chicago on the operators of illegal baby farms. These so-called maternity hospitals are a threat to the health and life of the infants committed to them, and the city administration, the state's attorney and municipal courts are united on a program for their extermination.

The distribution of 100,000 signs in Chicago, to be posted all over the city, was commenced recently by the commissioner of public works. The sign reads as follows: "Post No Bills. Don't Sweep Dirt into Street. Don't Spit on the Sidewalk. Don't Litter the Streets. Police Will Enforce the Above. Fred A. Busse, Mayor."

The Chicago Eye, Ear, Nose and Throat College has completed the purchase of a site, and within a year will begin the construction of an eight-story building, fitted for its uses, to cost from $125,000 to $150,000. The college owns the property at the southeast corner of Washington and Franklin streets, which adjoins the site just bought, so that it has a frontage on Washington street of 40½ feet and 80½ on Franklin.

Ground was broken for the new People's Hospital at Twenty-second street and Archer avenue, Chicago, June 16. The new building is to be three stories in height and of pressed brick and steel construction. The building is put up under the auspices of the People's Hospital Association, of which William D. Schaefer is president and Dr. I. Clark Gray secretary.

The ambulances of the health department of Chicago made 216 runs on the Fourth of July, or 40 fewer than those made for the previous week. They removed 120 sick or injured persons to the hospital, 15 to their homes. The ambulance surgeons treated 63 sick or injured persons at police stations, 9 at places of accident, and gave one treatment for heat stroke.

The American Association of Medical Examiners, at its June annual meeting, voted in favor of not accepting any reduction in the amount of compensation allowed by life insurance companies for the examination of an applicant, it being considered by all examiners present that the minimum fee of $5.00 was low enough and that insurance companies should be willing to pay that amount for a proper examination and report of any applicant, irrespective of the amount of policy applied for.

The Lincoln Park Sanatorium, conducted by the *Daily News*, has opened for the season, with Dr. Bathena Coone as medical superintendent

and Drs. Louis L. Gregory, Julian E. Hequembourg, Willis B. Storer and E. Iles Kerlin as attending staff; Drs. Alfred C. Cotton, John M. Dodson, E. Fletcher Ingals, Edwin B. Tuteur, Frederick W. Belknap, Maurice L. Goodkind and Cassius D. Wescott as consulting staff, with three house physicians.

The Woman's Medical Society of the State of Illinois has been incorporated by Dr. Marion K. Bowles, Joliet, and Dr. Sara C. Buckley and Bertha Van Hoosen, Chicago. The purpose of the organization is to bring into communication the medical women of Illinois for the purpose of securing cooperation, promoting all objects of interest to women in medicine, and for increasing interest in and the membership of the Illinois State Medical Society.

The revocation of the license of the Irene How Sanatorium, Chicago, is said to have been recommended by Health Commissioner Dr. William A. Evans because the hospital has not complied with the ordinance which demands a room for the proper care of the dead, pending the removal of the bodies; or for the accommodation of patients with contagious or infectious diseases, and because no record has been kept of the deaths or of children taken for adoption, and because the physicians named as attending physicians are not in attendance at the institution.

The State Board of Health announces that the law providing for the free distribution of diphtheria antitoxin by the State Board of Health became effective July 1, but that on account of the delay in the details of purchase and manufacture the supplies will not be ready for distribution before October 1. Meanwhile physicians will be able to secure antitoxin from any of the agents of the board without cost to the poor on obtaining an order from the supervisor or overseer, as required under the act of 1905. Cerebrospinal meningitis has been added by the State Board of Health to the list of infectious diseases. Notification is required, and public funerals of individuals dying from the disease are prohibited.

The annual report of the Milk Commission of the Children's Hospital Society of Chicago for the year ending December 31 shows the uniform and gratifying increase over the preceding year. Equipment and methods in the laboratory have improved with the passing of the experimental stage. Every effort has been made to secure milk of good uniform quality. The methods of pasteurization, filtration and milk enrichment in the laboratory have served to make milk wholesome and uniform in quality and nutritious. The loss of sales is met by the contributions of those interested in the society's purposes. The commission has various stations distributed over the city, and the milk is dispensed according to their rules.

A new organization was formed at Atlantic City, June 6, to be known as the Association of Medical Teachers of the Diseases of Children. The aim of the organization is the advancement of the standard of the teaching of that department in medical schools. The organization will also consider particular questions relative to hospitals and their management and the treatment of children at dispensaries and homes. The following

officers were elected: President, Dr. Samuel W. Kelly, Cleveland; vice-president, Dr. Charles Douglas, Detroit; secretary, Dr. John C. Cook, Chicago; treasurer, Dr. George H. Cattermole, Boulder, Colo., and censors, Drs. William C. Hollopeter, Philadelphia; Harry M. McClanahan, Omaha, and Richard B. Gilbert, Louisville.

The Council of the Chicago Medical Society, at its regular meeting in June, endorsed the work of the Public Health Defense League, the national headquarters of which are in the Unity Charity Building at New York City.

The league has for directors some of the most prominent business and professional men in the country.

Its objects are as follows:

1. To combat all forms of quackery and charlatanism.
2. To prevent food adulteration and drug substitution.
3. To prevent the sale of narcotics and alcohol disguised as patent medicine.
4. To prevent the circulation of indecent medical advertisements.
5. To advocate the establishment of a National Department of Health.
6. To carry on an educational campaign for the spreading of accurate knowledge concerning the public health and inculcating of higher health ideals.
7. To protect the public health by assisting the constituted authorities in the enforcement of existing laws and by urging the enactment of uniform legislation in all of the states on matters relating thereto.
8. To cooperate with other societies interested in any public health problem, and ultimately to effect a plan of union or cooperation of all organizations interested in the public health.

MARRIAGES.

Raymond Samuel Brown, M.D., Chicago, to Miss Mabel Collins, June 18.

Ralph C. Matheny, M.D., to Della M. Rice, M.D., both of Galesburg, Ill., July 3.

T. Martin Wiersen, M.D., was married to Miss Inga Norby, of Chicago, June 27.

Dennis James Normoyle, M.D., to Miss Alice Virginia Dunn, both of Chicago, June 25.

John Zeigler, M.D., Farmer City, Ill., to Miss Clara Squires, of Godfrey, Ill., June 20.

Thomas J. Kaster, M.D., to Miss Rose Agnes McMahon, both of Chicago, Ill., June 22.

William Henry Bahl, M.D., to Miss Edith Bruce, both of Chicago, at Joliet, Ill., June 14.

Peter J. McDermott, M.D., to Miss Nora I. Gulshen, both of Kewanee, Ill., June 19.

Florian Edward Schmidt, M.D., to Miss Anna Elizabeth Feaney, both of Chicago, June 12.

Albert F. Kaeser, M.D., was married to Miss Jennie Latzer, both of Highland, Ill., June 26.

H. S. CHURCH, M.D., of Modoc, Ill., was married to Miss Ella Beare, of Ellis Grove, Ill., June 25.

MARTIN J. IVEC, M.D., of Chicago, was married to Miss Elizabeth Schall, of Joliet, Ill., June 12.

THOMAS W. TORMEY, M.D., of Madison, Wis., was married to Miss Eva M. Cole, of Geneseo, Ill., June 12.

DEATHS.

GEORGE W. MANWAREN, M.D., Eclectic Medical College of the City of New York, 1891, died at his home in Fairbury, Ill., June 25, from uremia, after an illness of about two weeks, aged 56.

WILLIAM BRADLEY, M.D., Geneva (N. Y.) Medical College, 1864, formerly of Lockport, Ill., but latterly a resident of Evanston, died, June 30, at St. Luke's Hospital, Chicago, from cerebral hemorrhage, aged 69.

ARCHIBALD R. SMALL, M.D., Rush Medical College, Chicago, 1874, a member of the American Medical Association, Illinois State Medical Society and Chicago Medical Society, died at his home in Chicago, June 21, from disease of the liver, after an illness of two months, aged 56.

ALFRED H. CHAMPLIN, M.D., University of Michigan, Department of Medicine and Surgery, Ann Arbor, 1869, for a number of years a director of the school board of Englewood and later a member of the Chicago Board of Education, died at his home in Chicago, June 25, from diabetes, aged 66.

CHARLES HENRY MILLS, M.D., Medical Department, Western Reserve University, Cleveland, 1857, Illinois Army Board, 1862, Medical Department of the University of Nashville, Tenn., 1864, a member of the American Medical Association, one of the oldest practitioners of central Illinois, surgeon of the One Hundred and Twenty-fifth Illinois Volunteer Infantry during the Civil War, died from heart disease at his home in Champaign, Ill., July 4, aged 83.